

095100

JPRS-UBB-84-003

15 February 1984

# USSR Report

LIFE SCIENCES

BIOMEDICAL AND BEHAVIORAL SCIENCES

DISTRIBUTION STATEMENT A

Approved for public release;  
Distribution Unlimited

DTIC QUALITY INSPECTED 2

19980728 104

**FBIS**

FOREIGN BROADCAST INFORMATION SERVICE



6  
74  
Aφ4

## NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

## PROCUREMENT OF PUBLICATIONS

JPRS publications may be ordered from the National Technical Information Service (NTIS), Springfield, Virginia 22161. In ordering, it is recommended that the JPRS number, title, date and author, if applicable, of publication be cited.

Current JPRS publications are announced in Government Reports Announcements issued semimonthly by the NTIS, and are listed in the Monthly Catalog of U.S. Government Publications issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Correspondence pertaining to matters other than procurement may be addressed to Joint Publications Research Service, 1000 North Glebe Road, Arlington, Virginia 22201.

Soviet books and journal articles displaying a copyright notice are reproduced and sold by NTIS with permission of the copyright agency of the Soviet Union. Permission for further reproduction must be obtained from copyright owner.

## NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

## PROCUREMENT OF PUBLICATIONS

JPRS publications may be ordered from the National Technical Information Service (NTIS), Springfield, Virginia 22161. In ordering, it is recommended that the JPRS number, title, date and author, if applicable, of publication be cited.

Current JPRS publications are announced in Government Reports Announcements issued semimonthly by the NTIS, and are listed in the Monthly Catalog of U.S. Government Publications issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Correspondence pertaining to matters other than procurement may be addressed to Joint Publications Research Service, 1000 North Glebe Road, Arlington, Virginia 22201.

Soviet books and journal articles displaying a copyright notice are reproduced and sold by NTIS with permission of the copyright agency of the Soviet Union. Permission for further reproduction must be obtained from copyright owner.

15 February 1984

USSR REPORT  
LIFE SCIENCES  
BIOMEDICAL AND BEHAVIORAL SCIENCES

## CONTENTS

## AGROTECHNOLOGY

- Using Chlorocholine Chloride-Dihydrel Mixtures to  
Increase Resistance to Lodging in Winter Wheat Crops  
(L. D. Prusakova, L. G. Gruzdiyev; FIZIOLOGIYA  
RASTENIY, No 3, May-Jun 83)..... 1
- Trace Element Content of Fodder Plants Newly  
Introduced Into Belorussia  
(I. I. Chekalinskaya, et al.; VYESTSI  
AKADEMII NAVUK BSSR, No 4, Jul-Aug 83)..... 1
- Flight of Bollworm Moth *Helicoverpa Armigera* Males  
to Sex Pheromone Components  
(V. V. Buleza, et al.; DOKLADY AKADEMII NAUK  
SSSR, No 1, Sep 83)..... 2
- Achievements in Study of Entomopathogenic Viruses  
and Their Use in Plant Protection in Latvian SSR  
(A. P. Priyeditis, et al.; IZVESTIYA AKADEMII  
NAUK LATVIYSKOY SSR, No 9, Sep 83)..... 2

## BIOTECHNOLOGY

- Biotechnological Developments and Legal Aspects of  
Inventions in Biotechnology  
(A. A. Vorob'yev, V. I. Korovkin; ZHURNAL  
MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII,  
No 10, Oct 83)..... 4

## ENVIRONMENT

- Air and Foodstuffs Radioactivity in Moscow in 1980-1981  
(A. S. Zykova, et al.; GIGYENA I SANITARIYA,  
No 10, Oct 83)..... 5
- Quantitative Expression of the Function of Remote  
Indication of Soil Humidity  
(B. V. Vinogradov; DOKLADY AKADEMII NAUK SSSR,  
No 1, Sep 83)..... 6

## EPIDEMIOLOGY

- Briefs  
New Virus Infection..... 7
- Rapid Serodiagnosis of Typhoid Fever Using Cellulose-0  
Antigen Diagnosticums in Conjunction With Protein  
A-Containing Staphylococci  
(V. M. Nikitin, et al.; ZDRAVOOKHRANENIYE,  
No 2, Mar-Apr 83)..... 8
- Clinical and Epidemiologic Features of Winter Outbreak  
of Tropical Malaria Acquired Abroad  
(Ye. V. Mikhnevich, et al.; ZDRAVOOKHRANENIYE,  
No 2, Mar-Apr 83)..... 8
- Mathematical Methods in Differential Diagnosis of  
Chlamydial Infections and Brucellosis  
(I. N. Gnutov; ZDRAVOOKHRANENIYE KAZAKHSTANA,  
No 3, Mar 83)..... 9
- Cholear Vibrio Chemotaxis: Methods and Substances  
(N. I. Dimitrova, et al.; ZHURNAL MIKROBIOLOGII  
EPIDEMIOLOGII I IMMUNOBIOLOGII, No 9, Sep 83)..... 9
- Effects of R Plasmids on Recipient Salmonella Virulence  
in Relation to R Plasmid Donor Salmonella Typhimurium  
(O. N. Yakovleva, et al.; ZHURNAL MIKROBIOLOGII  
EPIDEMIOLOGII I IMMUNOBIOLOGII, No 9, Sep 83)..... 10
- Length Effect of F<sup>1</sup> Plasmid on Shigella Sonnei Virulence  
(I. A. Nastichkin, et al.; ZHURNAL MIKROBIOLOGII  
EPIDEMIOLOGII I IMMUNOBIOLOGII, No 9, Sep 83)..... 10
- Epidemiologic Aspects of Pediatric Brucellosis in  
Kazakhstan  
(A. I. Sattarov, S. A. Amireyev; ZHURNAL  
MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII,  
No 9, Sep 83)..... 11

Methodological Approaches to Complex of Interrelated Problems in Automated Control System for Epidemic Control.	
Part 2. Evaluation of Epidemic Dynamics	
(M. I. Narkevich, et al.; ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, No 10, Oct 83).....	11
Soil Infectivity Maintenance Mechanisms in Leptospiral Endemic Focus	
(M. V. Golubev, B. Yu. Litvin; ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, No 10, Oct 83).....	12
Usefulness of Passive Hemagglutination Inhibition Tests in Outbreaks of Pseudotuberculosis	
(V. V. Kolesnikova, G. P. Somov; ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, No 10, Oct 83).....	12
Modern Preventive Measures for Zoonotic Infections	
(V. P. Sergiyev, et al.; ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, No 10, Oct 83).....	13
Susceptibility of Red Marmots to Plague Bacilli Isolated in Talasskiy Alatau (Western Tian Shan)	
(U. A. Sagimbekov, et al.; ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, No 10, Oct 83).....	13
Probable Mechanism of Primary Infection of Plague Carriers in Transbaikal Endemic Region	
(B. V. Rasin; ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, No 10, Oct 83).....	14
Susceptibility of the Eastern Field Mouse (Microtus Fortis) and Maksimovich Field Mouse (M. Maximoviczi) to Tularemia	
(N. A. Sukhanov, et al.; ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, No 10, Oct 83).....	14
Characteristics of Vibrio El Tor Isolates From Open Water Bodies	
(A. G. Stogova, et al.; ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, No 10, Oct 83).....	15

## FOOD TECHNOLOGY

Specifics of Process Lines in Small and Medium Capacity Plants	
(M. Yu. Kazandzhiy; KONSERVNAYA I OVOSHCHESUSHIL'NAYA PROMYSHLENNOST, No 10, Oct 83).....	16
Study of Biological Value of Raw Fish and Fish Protein Preserves	
(Z. M. Ganoviyak, E. M. Lipka; VOPROSY PITANIYA, No 5, Sep-Oct 83).....	16

Study of Food Value of New Protein Products - Dry Protein Mixture (P. N. Maystruk, et al.; VOPROSY PITANIYA, No 5, Sep-Oct 83).....	17
--	----

Study of Molecular Structure and Immunological Properties of Highly Purified Hemagglutinin From Clostridium Botulinum Type A (L. G. Ivanova, et al.; BIOKHIMIYA, No 9, Sep 83).....	18
--	----

## GENETICS

Targeted Chemical Modification of Single-Stranded DNA Fragments (M. A. Grachev, S. I. Oshevskiy; DOKLADY AKADEMII NAUK SSSR, No 5, Oct 83).....	19
---	----

Human Fibroblast cDNA Clone Bank: Identification of Collagen Sequences and Copies of Repetitive Genomic Elements (A. P. Ryskov, et al.; DOKLADY AKADEMII NAUK SSSR, No 5, Oct 83).....	19
---	----

Cytogenetics of Robertsonian Translocations in Mammals (Yu. S. Demin, et al.; DOKLADY AKADEMII NAUK SSSR, No 1, Sep 83).....	20
--	----

Pathways of DNA Repair in Escherichia Coli K-12 Cells During Mutation Induction by Potassium Dichromate (L. M. Kalinina, S. R. Minseyitova; DOKLADY AKADEMII NAUK SSSR, No 1, Sep 83).....	21
---	----

Model For Study in Vitro of DNA Damage Repair Processes: Human Cells Chronically Infected With RNA-Containing Viruses With Inhibited System of Repair (I. V. Kolonina, et al.; DOKLADY AKADEMII NAUK SSSR, No 1, Sep 83).....	21
---	----

## IMMUNOLOGY

Study of Immunocompetent Cell Populations With Receptor or Protective Anthrax Antigen Following Immunization of Apes With STI Anthrax Vaccine (V. S. Smirnov, et al.; IMMUNOLOGIYA, No 4, Jul-Aug 83).....	23
---	----

Antigenicity and Reactogenicity of Concentrated, Purified, Uvinactivated Rabie Vaccine (A. V. Dulina, et al.; ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII, No 9, Sep 83).....	24
---	----

Vaccina Virus Protective Antigens (Ye. G. Zezerov, et al.; ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, No 10, Oct 83).....	24
---	----

Soluble Antigen-Based Vaccine for Specific Therapy of Proteus Infections (L. S. Kreynin, et al.; ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, No 10, Oct 83).....	25
--	----

Comparison of Hemagglutination and Immunoenzymatic Methods in Plague Diagnosis (Ye. P. Golubinskiy, et al.; ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, No 10, Oct 83).....	25
---	----

## LASER EFFECTS

Laser Scalpel Excision of Perianal Condyloma (Kh. B. Babayev, G. K. Kadamov; ZDRAVOOKHRANENIYE TURKMENISTANA, No 3, May 83).....	27
Specificity of Nonlinear Laser Scission of DNA (L. Z. Benimetskaya, et al.; DOKLADY AKADEMII NAUK SSSR, No 1, Sep 83).....	27

## MEDICINE

Mechanism of Action of Infrasound on Animals and Man (Literature Review) (S. V. Alekseyev, N. A. Mozzhukhina; GIGIYENA TRUDA I PROFESSIONAL'NYE ZABOLEVANIYA, No 9, Sep 83).....	29
Reflection of Significance of Acoustical Stimulii in Evoked Potentials During Programmed Human Motion (A. Ndinga, et al.; FIZIOLOGICHESKIY ZHURNAL IMENI I. M. SECHENOVA, No 9, 1983).....	30
Responses of Hypothalamic Supraoptic and Paraventricular Nuclei to Cooling in Rats Under Altered Gas Environment Conditions (Ye. S. Sergeyeva, S. S. Mogutov; FIZIOLOGICHESKIY ZHURNAL IMENI I. M. SECHENOVA, No 9, 1983).....	30
Continuous Measuring of Glucose Concentration in Cerebral Tissue Using Enzyme Microelements (G. S. Kilibayeva, I. T. Demchenko; FIZIOLOGICHESKIY ZHURNAL IMENI I. M. SECHENOVA, No 9, 1983).....	31
Analysis of Mechanism of Hypothermic Effect of Neurotropic Substances (Yu. V. Lupandin; FIZIOLOGICHESKIY ZHURNAL IMENI SECHENOVA, No 8, Aug 83).....	31
Narcosis of Laboratory Animals With Combined Direct and Pulsed Currents (V. P. Lebedev, et al.; FIZIOLOGICHESKIY ZHURNAL IMENI SECHENOVA, No 8, Aug 83).....	32



Vvedenskiy Paradox in Modern Physiology (D. P. Matyushkin; PRIRODA, No 10, Ict 83).....	33
Cerebral Bioelectrochemical Activity at Metallic Electrode Surface (T. B. Shvets-Teneta-Guriy; USPECKHI FIZIOLOGICHESKIKH NAUK, No 4, Jul-Sep 83).....	33
Morphological Criteria and System of Indices for Evaluating Neurotoxicity of Environmental Chemical Factors: Carbon Monoxide Model (T. I. Vonashevskaya, et al.; GIGIYENA I SANITARIYA, No 10, Oct 83).....	34
Porous Structure of Active Charcoals as Criterion of Analysis of Molecular Hemosorption Mechanisms and Purposeful Selection of Hemosorbents (K. S. Ternovoy, et al.; DOKLADY AKADEMII NAUK UKRAINSKOY SSR, No 9, Sep 83).....	35
MILITARY MEDICINE	
Organizing and Implementing Medical Care for Burn Patients Under Disaster Conditions (N. Ye. Povstyanoy, S. A. Polishchuk; FLINICHESKAYA KHIRURGIYA, No 3, Mar 83).....	36
MICROBIOLOGY	
Antigenic Complexes Responsible for Cross-Reaction Between Brucella SP. and Yersinia Enterocolitica 09 (M. M. Zheludkov, et al.; ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII, No 9, Sep 83).....	37
Isolation and Purification of Yersinia Pestis Neuraminidase (N. Ya. Shimanyuk, B. N. Mishan'kin; ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII, No 9, Sep 83).....	37
Inhibition and Stimulation of Microbial Viability During Cultivation (V. A. Mel'nikova; ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, No 10, Oct 83).....	38
Composition of Higher Fatty Acids in Intraspecific Taxons of Francisella Tularensis (I. S. Meshcheryakova, N. G. Olsuf'yev; ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, No 10, Oct 83).....	38

Immunoelectrophoretic Analysis of Antigenic Composition of Salmonella Typhi During L-Transformation and Reversion (L. K. Stepanova, et al.; ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, No 10, Oct 83).....	39
Effects of Sodium Chloride on Yersinia Pseudotuberculosis and Y. Enterocolitica (Ye. P. Sivolodskiy, et al.; ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, No 10, Oct 83).....	39
Changes in Macrophage Level of cAMP During Phagocytosis of Salmonella Typhimurium. Part 2. Effect of Microbial Virulence and Macrophage Immune Status on Time Course of cAMP Changes (M. N. Boychenko, I. L. Zhilina; ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, No 10, Oct 83).....	40
Arabinose Fermentation by Plague Bacillus Strains Isolated in Gornyy-Altay Endemic Focus (T. I. Vershinina, G. P. Aparin; ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, No 10, Oct 83).....	41
Relationship Between Pesticinogenicity and Phage Resistance in Plague Bacillus (Yu. G. Pak, et al.; ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, No 10, Oct 83).....	41
Activities of 'Pathogenicity' Enzymes and Pesticin- Fibrinolysin-Plasma Coagulase System Components in Subcellular Fractions of Plague Bacillus (I. A. Kuz'michenko, et al.; ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, No 10, Oct 83).....	42
Preparation of Bacillus Anthracis Protoplasts and Membranous Structures (Ye. V. Ivanova; ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, No 10, Oct 83).....	42
Growth Factor Requirements of Tularemia Bacilli (M. Kh. Kayupova, V. M. Stepanov; ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, No 10, Oct 83).....	43
Photosensory Transduction in Euglena Gracilis (Yu. I. Posudin; DOKLADY AKADEMII NAUK UKRAINSKOY SSR, No 9, Sep 83).....	43

## PHARMACOLOGY AND TOXICOLOGY

Effects of T-2 Toxin on Organelle-Specific Enzymes in Rat Tissues (L. V. Kravchenko, et al.; VOPROSY MEDITSINSKOY KHIMII, No 4, Jul-Aug 83).....	44
In Vivo and In Vitro Toxin Testing. Part 1. New In Vitro Method (I. A. Basnak'yan, et al.; ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII, No 9, Sep 83).....	45
Channel-Forming Properties of Presynaptic Neurotoxin of Latrodectus Tredecimguttatus (A. S. Sadykov, et al.; DOKLADY AKADEMII NAUK SSSR, No 5, Oct 83).....	45

## PUBLIC HEALTH

Administrative Aspects and Role of Republic Hospitals in Improving Rural Medical Care (M. Ye. Petrov; ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII, No 10, Oct 83).....	46
Basic Indices of Progress in Public Health in RSFSR (V. N. Ivakina; ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII, No 10, Oct 83).....	46
Statistics on Bed Capacity of Oblast, Kray and Republic (ASSR) Hospitals in RSFSR (G. P. Skvirskaya; ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII, No 10, Oct 83).....	47
Development of Public Health Facilities in Rural Rayons (N. I. Malov, V. I. Churakov; SOVETSKOYE ZDRAVOOKHRANENIYE, No 10, Oct 83).....	48
Basic Trends in Development of OB-GYN Services in Rural Communities (L. S. Kuznetsova; SOVETSKOYE ZDRAVOOKHRANENIYE, No 10, Oct 83).....	48
Effectiveness of Rehabilitation at Central Rayon Hospitals (V. S. Kilivnik; SOVETSKOYE ZDRAVOOKHRANENIYE, No 10, Oct 83).....	49
Diagnosis and Therapy of Iron Deficiency Anemia in Pregnant Women (G. A. Palladi, A. V. Mustyatse; ZDRAVOOKHRANENIYA, No 2, Mar-Apr 83).....	49

Rational Nutrition as a Key Factor in Decreasing Infant Morbidity (A. K. Mashkeyev, et al.; ZDRAVOOKHRANENIYE KAZAKHSTANA, No 3, Mar 83).....	50
Premature Birth in Pathogenesis of Obstetric Hemorrhage (K. M. Bazhenova, et al.; ZDRAVOOKHRANENIYE TURKMENISTANA, No 3, Mar 83).....	50
Condition of Neonates With Mothers in Risk Group for Development of Intrauterine Bacterial Infection (G. P. Mitrofanova, et al.; ZDRAVOOKHRANENIYE TURKMENISTANA, No 3, Mar 83).....	51
Child Health Models as Criteria of Hygienic Standardization of Physical Training in Preparatory Classes at School (N. T. Lebedeva; GIGIYENA I SANITARIYA, No 10, Oct 83).....	52

#### VETERINARY MEDICINE

Horizontal Transition Path of Oncornavirus Infection (V. M. Nakhmanson, et al.; VETERINARIYA, No 8, Aug 83).....	53
Course of Newcastle Disease at Poultry Farm (A. B. Teryukhanov; VETERINARIYA, No 8, Aug 83).....	53
Respiratory Infection on Suckling Piglets (Yu. A. Makarov, et al.; VETERINARIYA, No 8, Aug 83).....	54
Experimental Sarcocystosis in Lambs (M. P. Prus, et al.; VETERINARIYA, No 8, Aug 83).....	55
Culturing Duck Plague Virus (M. V. Kurochka, et al.; VETERINARIYA, No 9, Sep 83).....	55
Pathomorphology of the Urogenetal Organs in Infectious Bronchitis of Chickens (A. A. Ibragimov, M. A. Ramakhova; VETERINARIYA, No 9, Sep 83).....	56

#### CONFERENCES

Protection of Health of Women (SOVETSKAYA MOLDAVIYA, 15 Oct 83).....	58
Briefs	
Laser Conference.....	60
Enzymes and Public Health.....	60

MISCELLANEOUS

- Algorithms for Intricate Design of Semiconductor  
Converters for Electrofishing Industry  
(V.-A. Palshmitas; TEKHNICHESKAYA  
ELEKTRODINAMIKA, No 5, Sep-Oct 83)..... 62
- Toposcopy of Biologically Active Points in  
Intracranial Volume Processes  
(Z. Sh. Murvanidze, et al.; SOOBASHCHENIYA  
AKADEMII NAUK GRUZINSKOY SSR, No 3, Jun 83)..... 62

UDC 581.14.04

USING CHLOROCHOLINE CHLORIDE-DIHYDREL MIXTURES TO INCREASE RESISTANCE TO  
LODGING IN WINTER WHEAT CROPS

Moscow FIZIOLOGIYA RASTENIY in Russian Vol 30, No 3, May-Jun 83  
(manuscript received 17 Apr 82) pp 609-615

PRUSAKOVA, L. D. and GRUZDIYEV, L. G., Institute of Plant Physiology imeni  
K. A. Timiryazev, USSR Academy of Sciences, Moscow; All-Union Scientific  
Research and Design Technology Institute for Cybernetics, Moscow

[Abstract] Mixtures of herbicides, growth retardants and fertilizers are in common use as means of regulating growth and maturation, but, at times, many nutrients are utilized by weeds instead of the target crop. Since good success had been achieved with barley using chlorocholine chloride-dihydrel mixtures, the authors sought to use this combination on Mironovskaya 808 winter wheat in the Podol'skiy Rayon of Moscow Oblast, on peat-podzolic soil. The fertilizer applied was  $N_{120}P_{90}K_{90}$ . Results showed lodging reduction by a factor of 1.5 to 2.5 with various mixtures, while a 4 : 1 mixture of ingredients brought nearly complete elimination of lodging. Separate applications of growth regulators had no appreciable effect, while the mixtures had a clear synergistic effect. Overall-yield and protein-content of the wheat produced were both increased with the mixture. These positive results support the value of further research and production field tests of various mixtures of retardants and fertilizers, as well as study of their manufacture and application. References 21: 16 Russian, 5 Western.  
[046-12131]

UDC 581.19:633.2

TRACE ELEMENT CONTENT OF FODDER PLANTS NEWLY INTRODUCED INTO BELORUSSIA

Minsk VYESTSI AKADEMII NAVUK BSSR in Belorussian No 4, Jul-Aug 83  
(manuscript received 16 Apr 82) pp 33-36

CHEKALINSKAYA, I. I., DOVNAR, T. V. and PRILISHCH, N. P., Central Botanical Garden, Belorussian SSR Academy of Sciences

[Abstract] An analysis of trace element (Cu, Fe, Mn, Mo, Zn, Co) content of newly introduced fodder plants into Belorussia was conducted in order to

evaluate the nutritional value of such plants. The concentrations in such plants as knotweed (*P. weyrichii*), cow parsnip (*Heracleum*), *Astragalus*, and *Galega orientalis* was on the same order of magnitude as determined under the growth conditions of Ukraine, Karelia, and the Leningrad Oblast, and exceeded the trace element content of such common fodder plants as maize, hay, and winter rye. In certain cases levels in the newly introduced plants approached the values commonly seen with legumes (clover, lupine, lucerne). References 14: 1 Belorussian, 1 Polish, 12 Russian.  
[082-12172]

UDC 595.786:577.19

#### FLIGHT OF BOLLWORM MOTH *HELICOVERPA ARMIGERA* MALES TO SEX PHEROMONE COMPONENTS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 272, No 1, Sep 83  
(manuscript received 24 Feb 83) pp 244-247

BULEZA, V. V., MYTTUS, E. R., KOVALEVA, A. S., KAGAN, M. Z., KRAVCHENKO, V. D. and APASOV, S. G., Institute of Evolutionary Morphology and Ecology of Animals imeni A. N. Severtson, USSR Academy of Sciences, Moscow (Presented by Academician M. S. Gilyarov 21 Feb 83)

[Abstract] Field tests of individual components of bollworm sex pheromone and mixtures of them in different ratios showed that all combinations of *cis*-11 hexadecenal and *cis*-9-hexadecenal attracted males throughout the summer period regardless of the number or age of the moths. Mixtures of these components in ratios of 1.92:0.08 mg and 1.76:0.24 mg were most attractive. A four-component mixture of *cis*-11-dexadecenal:*cis*-9-hexadecenal:hexadecanol:hexadecenal in a 10:1:1:1 ratio was also effective. In order to study the possibility of using the sex attractant to control bollworms, experiments in disorienting males were performed. These studies showed that it is possible to use *cis*-11-hexadecenal alone for disorientation, but a mixture of *cis*-11-hexadecenal and *cis*-9-hexadecenal in a 9:1 ratio is required to detect and predict the number of bollworm moths. References 8: 4 Russian, 4 Western.  
[055-27912]

UDC 632.937:576.858.77:595.787

#### ACHIEVEMENTS IN STUDY OF ENTOMOPATHOGENIC VIRUSES AND THEIR USE IN PLANT PROTECTION IN LATVIAN SSR

Riga IZVESTIYA AKADEMII NAUK LATVIYSKOY SSR in Russian No 9, Sep 83  
(manuscript received 27 Jan 83) pp 72-79

PRIYEDITIS, A. P., ZARIN'SH, I. A. and RITUMA, I. A., Latvian Order of Labor Red Banner Agricultural Academy

[Abstract] Studies of the use of entomopathogenic viruses in insect control are described. Effective virus preparations which are harmless to useful

fauna and man have been produced. Properties of effective preparations should include high effectiveness, high stability, viscosity and adhesion and the filler should absorb sunlight of the same wavelength as does the genetic material of the infecting agent. The substance should protect the pathogen from insolation, prevent evaporation of the virus suspensions and be appetizing to insects. Preparations developed at the Latvian SSR Academy of Agriculture for control of lackey moths in fruit gardens and forests, for control of pine sawflies and for control of cabbage butterflies and small white butterflies are discussed in relation to conditions existing in Latvia. The effectiveness of the virus preparations is shown in a table and discussed in the text. A technology of production of the preparations, methods of storage and use of them are being developed. Their effect on the natural environment is being studied and the economic effectiveness and profitability of their use is being determined.

[048-2791]



BIOTECHNOLOGY

UDC 577.212.3:008

BIOTECHNOLOGICAL DEVELOPMENTS AND LEGAL ASPECTS OF INVENTIONS IN BIOTECHNOLOGY

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 10, Oct 83 (manuscript received 26 Apr 83) pp 13-19

VOROB'YEV, A. A. and KOROVKIN, V. I., Main Administration of Microbiological Industry, USSR Council of Ministers

[Abstract] Recent developments in biotechnology have posed several interesting questions regarding legal protection of inventions in this field, and the need to define what can be regarded as an invention in dealing with microscopic forms of life and their products, and the processes by which the microorganisms can be modified to yield new or desired products. Although there is general agreement on the need for depositing specific cultures of microbial cells, or plant or animal cell lines, or various types of vectors and plasmids, specific criteria have yet to be worked out for the procedures to be followed in deposition and what can or should be excluded and included in such procedures. The Soviet patent system and legal requirements are sufficiently well advanced to meet present requirements of biotechnology, and will continue to be developed in accordance with advancements in biotechnology. References 3 (Western).

[141-12172]

ENVIRONMENT

UDC 614.73+613.2:546.42.02.90](470.311-25)"1980-1981"

AIR AND FOODSTUFFS RADIOACTIVITY IN MOSCOW IN 1980-1981

Moscow GIGYENA I SANITARIYA in Russian No 10, Oct 83 (manuscript received 26 Apr 83) pp 78-81

ZYKOVA, A. S., TELUSHKINA, Ye. L., YEFREMOVA, G. P., KUZNETSOVA, G. A. and KISELEV, V. V.

[Abstract] Summary details are presented of radioactive pollution in Moscow and adjacent areas in the period 1980-1981. In 1981 the fallout of beta- and gamma-radioactive particles in Moscow and environs stood at  $10^9$  Bq/km<sup>2</sup>, a figure twice as great as in 1980. The mean annual concentration of radionuclides in the air showed a five-fold increase in 1981 to 5 mBq/m<sup>3</sup> in comparison with 1980. However, the concentrations of strontium-90 and cesium-137 in the milk, potatoes and vegetables remained virtually unchanged in the period covered, with the cesium-137/strontium-90 ratio ranging from 0.45 (carrots) to 2.75 (milk) in 1980, and from 0.55 (beets) to 4.0 (milk) in 1981. [130-12172]

## QUANTITATIVE EXPRESSION OF THE FUNCTION OF REMOTE INDICATION OF SOIL HUMIDITY

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 272, No 1, Sep 83  
(manuscript received 21 Oct 82) pp 247-250

VINOGRADOV, B. V., Institute of Evolutionary Morphology and Ecology of Animals imeni A. N. Severtsov, USSR Academy of Sciences, Moscow; Leningrad Department of the Institute of Oceanology imeni P. P. Shirshov, USSR Academy of Sciences (Presented by Academician V. Ye. Sokolov 11 Oct 82)

[Abstract] Derivation of a universal equation  $[\rho(w) = \rho_2 + (\rho_0 - \rho_2) \exp(-\alpha w^c) + d w^m]$  in which  $\rho_0$  is the luminance factor of dry soil when  $w=0$ ;  $\rho_2$  is the luminance factor of soil with humidity near to the least field moisture capacity when there are no free forms of moisture; coefficients  $\alpha$ ,  $d$  and  $n$  are less than 1 and  $c$  is greater than 1, is presented step by step and discussed. This equation presents a quantitative expression of the  $\rho(w)$  dependence ( $\rho$  is the spectral luminance factor in the visible region of the spectrum and  $w$  is the humidity of the surface layer of the soil) for the entire range of soil humidity and reflects the phase state of moisture in the soil. This equation makes it possible to extrapolate extensively remote indicators of soil humidity, to minimize the sample studied and to construct calibration curves  $\rho(w)$  more quickly for changing natural and technical conditions of surveying. Figure 1; references 4: 3 Russian, 1 Western.  
[055-2791]

## EPIDEMIOLOGY

### BRIEFS

NEW VIRUS INFECTION--Outbreaks of an uncommon disease were noted in the Karelian Autonomous Republic at the end of summer and beginning of fall, 1981. The disease began suddenly with a high fever, copious rash and arthritis mainly in the knee and talocrural joints. All those afflicted had been in the taiga at a time when the population of blood-sucking insects (both mosquitoes and midges) was 6-10 times above normal. Now the virologists of Moscow, Leningrad and Petrozavodsk have established the nature of this sudden flare-up: It was caused by an agent close to Sindbis virus, which produces a sporadic illness with rash and joint involvement and is known in southern Africa. It now remains to be explained why the virus appeared in Karelia. It may have been brought in by migratory birds. [Text] [Riga NAUKA I TEKHNIKA in Russian No 10, Oct 83 pp 33-34]

COPYRIGHT: Izdatel'stvo TsK KP Latvii, "Nauka i tekhnika," 1983

CSO: 1840/192

UDC 616.981.49-078.734

RAPID SERODIAGNOSIS OF TYPHOID FEVER USING CELLULOSE-O ANTIGEN DIAGNOSTICUMS  
IN CONJUNCTION WITH PROTEIN A-CONTAINING STAPHYLOCOCCI

Kishinev ZDRAVOOKHRANENIYE in Russian No 2, Mar-Apr 83 (manuscript received  
2 Nov 81) pp 21-24

NIKITIN, V. M., NAKHABA, V. A. and BYKOV, A. S., Chair of Microbiology,  
Kishinev Medical Institute; Chair of Microbiology, First Moscow Medical  
Institute imeni I. M. Sechenov

[Abstract] Details are presented on the preparation of a diagnostic reagent designed for rapid diagnosis of typhoid fever by means of slid agglutination. The essential feature of this test for the detection of anti-O antigen antibodies consists of the use of cellulose-bound O antigen diagnosticum mixed with protein A-containing staphylococci (*S. aureus* Cowan-1). The resultant products show high specificity and a sensitivity that exceeds that seen with the standard (non-protein A) reagent four- to eight-fold, and has a shelf life of at least a year. Control tests with protein A-lacking staphylococci were negative. Figures 1; references 12: 8 Russian, 4 Western.  
[066-12172]

UDC 616.936-084.4

CLINICAL AND EPIDEMIOLOGIC FEATURES OF WINTER OUTBREAK OF TROPICAL MALARIA  
ACQUIRED ABROAD

Kishinev ZDRAVOOKHRANENIYE in Russian No 2, Mar-Apr 83 (manuscript received  
18 Dec 82) pp 41-43

MIKHNEVICH, Ye. V., PANASYUK, A. L., LEKA, M. V. and BRYNZAN, N. Z., Chair of  
Infectious Diseases, Kishinev Medical Institute; Rezin Central Rayon Hospital

[Abstract] Seven of 18 Soviet citizens that had visited Bissau, Guinea in November developed clinical malaria on return to Moldavia in December. Six of the patients developed typical malaria--two of them a severe case--and one remained a carrier. The mean incubation period for the group was  $18.9 \pm 4.5$  days. The patients were successfully treated with delagil for 5 days, following

which temperature abated, all clinical signs of malaria disappeared and *P. falciparum* was not detectable in thick blood smears. The patients continued to receive delagil (1 g per week) for 8 weeks. Immunofluorescence tests conducted after a year yielded negative results in 6 cases (including the former carrier) and a positive result in one patient in a titer of 1:160 who had sustained a severe course.  
[066-12172]

UDC 616.981.42-071+616.988:13

#### MATHEMATICAL METHODS IN DIFFERENTIAL DIAGNOSIS OF CHLAMYDIAL INFECTIONS AND BRUCELLOSIS

Alma Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 3, Mar 83 pp 20-23

GNUTOV, I. N., Chair of Infectious Diseases, Tselinograd Medical Institute

[Abstract] In view of the clinical similarity of chlamydial infections and brucellosis and their high incidence in Northern Kazakhstan, as well as the fact that most human cases result from contact with infected domestic animals, a statistical approach was utilized to ascertain differential diagnosis between these two disease processes. Tables were constructed of symptoms for each infection and a diagnostic coefficient was assigned to each symptom based on a probability factor, and arranged according to information content index. Clinical trials with 44 patients with chlamydial infections and 99 with brucellosis showed that diagnosis based on such a table was 99.9% accurate in the chlamydial cases and 98% correct in brucellosis. References 5 (Russian).  
[067-12172]

UDC 579.843.1:579.61]:612.467

#### CHOLEAR VIBRIO CHEMOTAXIS: METHODS AND SUBSTANCES

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 9, Sep 83 (manuscript received 18 Jan 83) pp 24-28

DIMITROVA, N. I., URALEVA, V. S. and TRUBNIKOVA, V. A., Rostov on Don Scientific Reserach Antiplague Institute

[Abstract] The chemotactic behavior of *Vibrio* El Tor 3119 (Ogawa) and 5879 (Inaba) and of *V. cholerae* 569B were tested at 20 and 37°C against 50 substances (amino acids, carbohydrates, petrochemicals, detergents) by a modification of Adler's method [J. Genrl. Microbiol., 74:77-91, 1983]. Optimum results were obtained at 37°C with 30-60 min migration times which demonstrated that the amino acids and certain carbohydrates (glucose, mannose, maltose) function as strong attractants. Sucrose and sorbitol were found to be weak attractants, while other substances were ineffective stimuli, with the exception of the detergent Progress which induced negative chemotaxis. The minimum effective

concentration for the different amino acids ranged from 0.001 to 0.01%, and for the carbohydrates from 0.001 to 0.1%. In addition, the El Tor vibrios exhibited greater chemotactic activity than the *V. cholerae*. Figures 1; references 10: 3 Russian, 7 Western.  
[124-12172]

UDC 579.842.14:579.252.5

EFFECTS OF R PLASMIDS ON RECIPIENT SALMONELLA VIRULENCE IN RELATION TO R PLASMID DONOR SALMONELLA TYPHIMURIUM

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 9, Sep 83 (manuscript received 10 Jan 83) pp 40-46; YAKOVLEVA, O. N., ROMANOVA, Yu. M. and PETROVSKAYA, V. G., Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, USSR Academy of Medical Sciences, Moscow

[Abstract] Studies were conducted on the state of R-plasmids in *Salmonella typhimurium* belonging to phagovars 20 and 25, the strains most frequently isolated from nosocomial infections in the USSR. In addition, strains also isolated from waste waters, reservoirs, and household articles were also employed in conjugation experiments using *E. coli* K12 C600 *rif<sup>r</sup>* and *S. typhimurium* 40 and A80 (both nalidixic acid and spectinomycin resistant) as recipients. The different donor *S. typhimurium* cells were found to possess both transmissible and non-transmissible R-plasmids; with *E. coli* the transmission frequency ranged from  $0.6 \times 10^{-5}$  to  $0.7 \times 10^{-3}$  per donor cell. Plasmid transfer to *S. typhimurium* 40 and A80 required a helper donor, *S. typhimurium* 782, carrying the mobilizing plasmid  $F_{oc}$ , and occurred with a frequency of  $1.0 \times 10^{-7}$  to  $2.2 \times 10^{-4}$  per donor cell. The *S. typhimurium* recipients showed a two- to four order of magnitude decrease in virulence for mice on intraperitoneal or enteral infection. References 16: 9 Russian, 7 Western.  
[124-12172]

UDC 579.842.15:579.252.5

LENGTH EFFECT OF  $F^1$  PLASMID ON SHIGELLA SONNEI VIRULENCE

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 9, Sep 83 (manuscript received 6 Jan 83) pp 60-63

NASTICHKIN, I. A., LYCHEVA, T. A. and PETROVSKAYA, V. G., Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, USSR Academy of Medical Sciences. Moscow

[Abstract] Conjugation studies were conducted to determine the effects of  $F^1$  plasmid carrying different lengths of *E. coli* chromosome on *Shigella sonnei* virulence, and, to localize on the *Sh. sonnei* chromosome the region that is analogous to the *kcpA* gene (keratoconjunctivitis provocation) in *Sh. flexneri*.

Sh. sonnei recipients lost virulence after conjugation with E. coli K12 x 573 and 200 PS donors (plasmids incorporating lac-pur E and lac-pro C chromosomal segments, respectively), but retained the ability after conjugation with E. coli K12 x 363 in which the F<sup>I</sup> plasmid carries the lac I-tsx chromosomal segment. These findings indicate that the F plasmid itself does not affect shigella virulence. The evidence does indicate, however, that the kcpA gene has moved from the pur R region (in Sh. flexneri) to the lactose operon in Sh. sonnei and is on the left of the lac I gene. Figures 1; references 12: 2 Russian, 10 Western.  
[124-12172]

UDC 616.98:579.841.93]-053.2-036.22(574)

#### EPIDEMIOLOGIC ASPECTS OF PEDIATRIC BRUCELLOSIS IN KAZAKHSTAN

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 9, Sep 83 (manuscript received 13 Dec 82) pp 92-94

SATTAROV, A. I. and AMIREYEV, S. A., Kazakh Scientific Research Institute of Epidemiology, Microbiology and Infectious Diseases, Alma-Ata

[Abstract] An analysis was made of the epidemiologic aspects of pediatric cases of brucellosis in Kazakhstan in the period 1972-1981. The results showed that during that period of time brucellosis accounted for 11.3% of pediatric morbidity, and that 91.2% of the patients are rural children. The highest incidence prevails in the Southern Kazakhstan with extensive sheep husbandry and small horned domestic animals--privately owned--constituted the largest reservoir of brucellosis. Most of the victims were boys (60.6%), with infections usually occurring as a result of direct contact (61.6%) or via the alimentary canal (12.1%). Peak outbreaks of brucellosis among the children were noted to occur in the spring and summer months with features of an acute disease. Effective preventive measures will have to rely on eradication of the disease among domestic farm animals. References 10 (Russian).  
[124-12172]

UDC 616.9-036.2+614.4"5"

#### METHODOLOGICAL APPROACHES TO COMPLEX OF INTERRELATED PROBLEMS IN AUTOMATED CONTROL SYSTEM FOR EPIDEMIC CONTROL. PART 2. EVALUATION OF EPIDEMIC DYNAMICS

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 10, Oct 83 (manuscript received 15 Dec 82) pp 38-43

NARKEVICH, M. I., TARASKIN, V. F., VERSHININA, O. S., MALYGIN, A. V. and KOLESNICHENKO, V. I.

[Abstract] Mathematical foundation is provided for the use of standard form 85 and a table-top calculator for conducting operative and retrospective



analysis of the intensity of epidemics, based either on weekly statistics confirmed by diagnosis, or on statistical patterns on a monthly basis. Once the patterns are discerned for a given epidemic, counter-measures can be employed based on the anticipated spatiotemporal disease pattern. The entire system of analysis is designed essentially for epidemiologists at sanitary-epidemiological stations charged with monitoring the progress of a given epidemic. Figures 1; references 2 (Russian).  
[141-12172]

UDC 616.98:579.834.115]-036.21

#### SOIL INFECTIVITY MAINTENANCE MECHANISMS IN LEPTOSPIRAL ENDEMIC FOCUS

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 10, Oct 83 (manuscript received 26 Apr 83) pp 43-46

GOLUBEV, M. V. and LITVIN, B. Yu., Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, USSR Academy of Medical Sciences, Moscow

[Abstract] Studies were conducted on the mechanisms responsible for supporting soil infectivity in endemic foci of leptospirosis by injecting field mice, with leptospirosis, with radioactive sodium phosphate to follow urinary excretion at different sites. Additionally, infectivity of such soil was also tested on golden hamsters injected with soil suspensions. Using individual mice and groups of infected animals showed that 65% of the sites could be reinfected 5-7 times during the course of a 7 day period of observation, while 35% of the sites escaped reinfection. Therefore, 35% of the sites could be expected to become leptospira-free within about two weeks, while 65% of the sites would remain infective. Consequently, an endemic area appears to be determined by certain sites that undergo continuous or periodic reinfection as a result of the presence of infected carriers. (The site of the test, in 1982, was Lake Nero, Yaroslavl Oblast.) References 7 (Russian).  
[141-12172]

UDC 616.24-002.5-039-078.73

#### USEFULNESS OF PASSIVE HEMAGGLUTINATION INHIBITION TESTS IN OUTBREAKS OF PSEUDOTUBERCULOSIS

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 10, Oct 83 (manuscript received 12 Apr 83) pp 93-94

KOLESNIKOVA, V. V. and SOMOV, G. P., Scientific Research Institute of Epidemiology and Microbiology, Siberian Division, USSR Academy of Medical Sciences, Vladivostok

[Abstract] Passive hemagglutination-inhibition (PHI) and bacteriologic techniques were used in uncovering the source of 19 outbreaks of pseudotuberculosis involving 678 patients. PHI was found to be much more useful in

detecting *Y. pseudotuberculosis* antigens in foodstuffs and washings of various objects than bacteriologic methods in detecting the contaminating organisms. Most cases were found to be due to contaminated vegetables, among which carrots and cabbage figured most prominently; on an overall basis PHI yielded positive results in  $28.2 \pm 1.7\%$  of the samples and standard bacteriology in  $13.7 \pm 1.3\%$ . In addition to greater sensitivity, PHI offered results within the day of testing while the bacteriologic techniques required 6-28 days for the identification of the pathogenic microorganism. The more rapid identification of the suspect food products made possible earlier eradication of such outbreaks. [141-12172]

UDC 616.9-022.39-084(571.1./6)

#### MODERN PREVENTIVE MEASURES FOR ZONOTIC INFECTIONS

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian  
No 10, Oct 83 pp 97-99

SERGIYEV, V. P., KUZNETSOVA, K. A., TESLENKO, Ye. B. and POPOV, V. P.,  
Moscow

[Abstract] A review is presented of current efforts at the national and international scale to control and prevent more than 150 zoonotic infections, such as rabies, brucellosis, tularemia, leptospirosis, anthrax, etc. The USSR is actively cooperating with the appropriate administrative bodies of the WHO and lending assistance to the less-well-developed countries, based on the experience and resources of the USSR. Within the USSR, more than 50 institutions are engaged in such campaigns, with particular attention devoted to the eradication of plague. In addition to the development of novel and improved diagnostic and identification techniques and methods, considerable attention is devoted to the identification and isolation of virulence factors that may preclude the need for animal studies. Extensive research is also being conducted on the development of new and more effective vaccines and sera, and improved immunodiagnostic reagents. [141-12172]

#### SUSCEPTIBILITY OF RED MARMOTS TO PLAGUE BACILLI ISOLATED IN TALASSKIY ALATAU (WESTERN TIAN SHAN)

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian  
No 10, Oct 83 pp 103-104

SAGIMBEKOV, U. A., POSHEVINA, G. O., RZHEVSKIY, V. F. and RAKHIMOV, K. R.,  
Chimkent

[Abstract] Two cultures of the plague bacillus isolated from red marmots in 1977 in the mountains of the Talasskiy Alatau, in the Western Tian Shan, differed in certain respects from cultures usually isolated in the mountainous

and steppe regions of Central Asia. These isolates did not carry out denitri-  
fication, produce fraction 1, or ferment arabinose, but did ferment rhamnose  
after 2 days of incubation. Subcutaneous infection of red marmots with  $10^2$  to  
 $10^8$  bacilli of the newly isolated cultures led to clinical signs of diseases  
within two to three days, with complete recovery in six to seven days and no  
mortality within a 30 day period of observation. A few animals developed  
abscesses with long-term persistence of the bacilli, although attempts at  
recovery of the bacilli were negative after nine to 21 days in most of the  
animals, and serologic studies of the sera were always negative. It is evident  
then, that the red marmots are quite resistant to the isolates in question as  
a group, although individual variability is a factor to be considered.  
[141-12172]

#### PROBABLE MECHANISM OF PRIMARY INFECTION OF PLAGUE CARRIERS IN TRANSBAIKAL ENDEMIC REGION

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 10,  
Oct 83 pp 104-106

RASIN, B. V., Borzuya

[Abstract] Although the Transbaikal region is regarded as plague-free in  
terms of the human population, the occasional cases of infected rodents  
(susliks, marmots) that may function as carriers remains an area of concern.  
The best available evidence for the origin of such cases seems to be the use  
by these animals of sealed or immured burrows of tarbagan, which had served  
as the primary source of infection prior to their eradication. Such burrows  
may contain the mummified remains of infected tarbagans, their excreta, and  
other contaminated detritus and, consequently, appear to pose a newly-  
recognized, long-term danger. Current plans for re-introducing the tarbagan  
into this region may again result in the transformation of this region into  
an active endemic focus.  
[141-12172]

#### SUSCEPTIBILITY OF THE EASTERN FIELD MOUSE (MICROTUS FORTIS) AND MAKSIMOVICH FIELD MOUSE (M. MAXIMOVICZI) TO TULAREMIA

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 10,  
Oct 83 pp 106-107

SUKHANOV, N. A., BRIKMAN, D. I., TIKHOMIROV, E. L. and MIZITOVA, L. A.,  
Irkutsk; Chita

[Abstract] Studies were conducted on the susceptibility to tularemia of the  
Eastern field mouse (*Microtus fortis*) and the Maksimovich field mouse  
(*M. maximoviczi*; Ungur field mouse) by determining survival and immune response  
to a subcutaneous challenge with highly virulent bacilli. On the basis of

moderate motility, both genera were assigned to the second susceptibility group. Both species responded with adequate antibody formation; however, the antibodies could only be detected by agglutination tests and not by passive hemagglutination.

[141-12172]

#### CHARACTERISTICS OF VIBRIO EL TOR ISOLATES FROM OPEN WATER BODIES

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian  
No 10, Oct 83 p 103

STOGOVA, A. G., SEMIOTROCHEV, V. L., GOLIK, A. F., KLASSOVSSKAYA, T. L.,  
SEDINA, S. G. and OGNEVSKIY, P. Ya., Alma-Ata

[Abstract] Cultural, immunological, and virulence studies were conducted on 127 isolates of *Vibrio El Tor* obtained from open water bodies in a cholera-free region. All of the isolates gave positive Voges-Proskauer reactions, hemolyzed sheep erythrocytes on solid media and, on the basis of phase susceptibility, appeared to be avirulent. However, virulence studies on suckling rabbits demonstrated that while 81.1% of the isolates were avirulent, 18.9% were weakly virulent. In terms of other cultural characteristics, the isolates showed considerable variability, but all showed a high degree of resistance to polymyxin and susceptibility to tetracycline. Additional epidemiologic studies will be required to determine the actual significance of avirulent cholera vibrios persisting in what is regarded as a cholera-free area.

[141-12172]

UDC 664.8.036.53:658.527

SPECIFICS OF PROCESS LINES IN SMALL AND MEDIUM CAPACITY PLANTS

Moscow KONSERVNAYA I OVOSHCHESUSHIL'NAYA PROMYSHLENNOST in Russian No 10, Oct 83 pp 9-10

KAZANDZHIY, M. Yu., candidate of technical sciences, Sector chief, Odessa Special Design and Technology Office for Production Machinery

[Abstract] The experience of the Moldavian canning industry has shown that transportation costs can be reduced and production facilities more fully utilized by preprocessing of fruits and vegetables in farming regions, subsequent shipment by tank truck or rail tank car to the canning plant. The creation of a combined system of fruit and vegetable processing equipment for small and medium capacity canning plants can improve the level of mechanization at these enterprises, reduce losses of raw materials by bringing processing plants closer to growing areas and reduce transportation costs by shortening transportation distances. The "combined system of machines for processing of fruit and vegetables at small and medium capacity enterprises" includes process lines for single and multicomponent canned goods, completely or partially utilizing the vegetable raw materials. The author's institute has analyzed canning technology and developed suggestions for the creation of combined process systems for a number of years. This has allowed significant standardization of technological processes. The new "system of machines" includes 25 process lines for the production of canned goods, including 9 lines to be provided by CEMA member countries in accordance with their established specialization.  
[059-6508]

UDC 613.281:637.56:612.898

STUDY OF BIOLOGICAL VALUE OF RAW FISH AND FISH PROTEIN PRESERVES

Moscow VOPROSY PITANIYA in Russian No 5, Sep-Oct 83 (manuscript received 18 Feb 83) pp 46-49

GANOVYAK, Z. M., LIPKA, E. M., Department of Nutritional Hygiene, (headed by Professor Z. M. Ganovyzk), Gdan'sk Academy of Medicine, Poland

[Abstract] The purpose of this work was to establish biologically definable quality indices for raw and preserved fish-protein and the degree of influence

of processes involving preservation on their biological value. Mature rats were fed diets consisting of fresh and preserved herring, cod, mackerel and sprat in a feed mixture. The fish protein replaced 8 to 10% of the starch in a standard feed mixture. The apparent and true assimilation rate, protein efficiency, net protein ratio and net dietary protein calorie percent were determined by standard (Western) methods. Weight gain was greater in animals receiving raw fish protein, decreasing in the sequence mackerel, herring, cod, sprat. Mackerel and herring were as effective as egg powder in this respect. Preserved fish protein yielded 30 to 40% less body mass gain than fresh protein. Results were similar for protein efficiency and the other characteristics measured. Figures 4; references 9: 1 Russian, 5 Western, 3 East European. [072-6508]

UDC 613.28:637.66]-07

#### STUDY OF FOOD VALUE OF NEW PROTEIN PRODUCTS - DRY PROTEIN MIXTURE

Moscow VOPROSY PITANIYA in Russian No 5, Sep-Oct 83 (manuscript received 19 Nov 82) pp 49-52

MAYSTRUK, P. N., YATSKOVSKAYA, N. Ya. and SOLOMKO, G. I., Scientific Research Institute of Nutritional Hygiene, Ukrainian SSR Ministry of Health, Kiev

[Abstract] A method has been developed for producing dry clarified blood by means of a peroxy-catalase system. Mixing this product with dry nonfat milk in a ratio of 1:1 produces a new product, dry protein mixture [in Russian, SBS]. This work studies the food value of SBS. Nitrogen content, amino acid content, tryptophan content, fatty acid composition, mineral composition, biologic effectiveness and assimilation of the iron of the new product were determined. The new product is a light yellow finely-dispersed powder with the odor and taste of dry milk. The energy value of 100 g of SPS is 1447.0 kJ. The dry nonfat milk which the product contains significantly improves the amino acid composition of the mixture. It is concluded that the product has biological value for use in prophylactic and therapeutic diets. However, considering the high iron content, long-term animal experiments are needed to assure there is no unfavorable effects on the organism. References 10: 8 Russian, 2 Western. [072-6508]

## STUDY OF MOLECULAR STRUCTURE AND IMMUNOLOGICAL PROPERTIES OF HIGHLY PURIFIED HEMAGGLUTININ FROM CLOSTRIDIUM BOTULINUM TYPE A

Moscow BIOKHIMIYA in Russian Vol 48, No 9, Sep 83 (manuscript received 14 Dec 82) pp 1548-1554

IVANOVA, L. G., BLAGOVESHCHENSKAYA, V. A., VINOGRADOVA, I. D., KOLESNIKOVA, V. A., UGRYUMOVA, G. A. and MIKHEYEVA, G. V., Scientific Research Institute of Epidemiology and Microbiology imeni N. F. Gameleya, USSR Academy of Medical Sciences, Moscow

[Abstract] A method of producing highly purified hemagglutinin from a toxic complex of Cl botulin type A is presented and study description given of the molecular structure of the hemagglutinin in connection with peculiarities of its biological activity and serological specificity. The production method includes separation of the hemagglutinin fraction from the toxic complex of Cl. botulin type A, removal of the neurotoxin admixture from the hemagglutinin, separation of biologically-inactive admixtures from the hemagglutinin, preparation of immunosorbent II and production of highly purified hemagglutinin. Electrophoresis on polyacrylamide gel showed that the hemagglutinin is a heteropolymeric protein consisting of a monomer with molecular mass of 53000 and a trimer with molecular mass 16000. The monomer contains two subunits with molecular mass of 13000 and one subunit with molecular mass 27000 connected by two SS-crosslinks. A hypothetical structural model of hemagglutinin was presented. The high degree of purity of the hemagglutinin was established by immunochemical analysis. The hemagglutinin retains its specific activity for at least one year when stored at 0 to -5° and pH 6 to 8. Aigures 6; references 37: 11 Russian, 26 Western.

[062-2791]

UDC 547.963.32.07

TARGETED CHEMICAL MODIFICATION OF SINGLE-STRANDED DNA FRAGMENTS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 272, No 5, Oct 83  
(manuscript received 24 Mar 83) pp 1259-1262

GRACHEV, M. A. and OSHEVSKIY, S. I., Institute of Cytology and Genetics and the Novosibirsk Institute of Organic Chemistry, Siberian Division, USSR Academy of Sciences, Novosibirsk

[Abstract] Certain experimental aspects of targeted ('addressed') chemical modification of selected segments of single-stranded DNA are presented, a technique which is analogous to affinity labeling and relies on complementarity between an oligonucleotide reagent and the target DNA region. Details are presented on the alkylation of a 203 nucleotide fragment of phage M13mpI DNA, using as the alkylating reagent a deoxyriboheptanucleotide (CpTpTpTpCpCpA) with the alkylating agent on the 5' terminus. The heptanucleotide 'address' is complementary to the segment between the 39th and the 47th base of the DNA. However, actual alkylation was found to occur in the region between the 80th and the 90th base, which represents a significant distance from the 'address' site. The difference between the expected and actual alkylation site was ascribed to secondary and tertiary structural features of the target DNA molecule, which bring linearly distal regions in close proximity to the complementary site. Such factors as suprastructure, therefore, must be given due consideration in the further development of this technique. Figures 2; references 15: 7 Russian, 8 Western.  
[044-12172]

UDC 547.963.3

HUMAN FIBROBLAST cDNA CLONE BANK: IDENTIFICATION OF COLLAGEN SEQUENCES AND COPIES OF REPETITIVE GENOMIC ELEMENTS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 272, No 5, Oct 83  
(manuscript received 4 Feb 83) pp 1268-1272

RYSKOV, A. P., KORNEYEV, S. A., PROSNYAK, M. I. and LIMBORSKAYA, S. A., Institute of Molecular Biology, USSR Academy of Sciences; Institute of Medical Genetics, USSR Academy of Medical Sciences, Moscow

[Abstract] Details are presented on the use of total cytoplasmic mRNA of human embryonal fibroblasts for the synthesis of cDNA and the selection of



recombinants containing collagen sequences and copies with repetitive genomic elements as a result of cloning in *E. coli*. Under the conditions selected, the efficiency of reverse transcription ranged from 20 to 30%, while that of the synthesis of the second strand of cDNA approached the 60-70% range. The resultant cDNA molecules had a mean length of ca. 2000 nucleotides (500 to 6000 nucleotide spread). Following transformation of *E. coli*, hybridization analysis of the resultant clones indicated that ca. 5% of the cytoplasmic (A)<sup>+</sup>RNA of human fibroblasts consists of procollagen mRNA. In addition, 0.5-1% of the recombinants hybridize with total human DNA, suggesting that human mRNA contain repetitive elements. Consequently, by means of genetic engineering a bank of cDNA clones was established in which certain recombinants contain repetitive elements of the human genome. Such banks can be of crucial importance in elucidating the role of the repetitive elements in gene expression. Figures 3; references 7: 5 Russian, 2 Western.  
[044-12172]

UDC 575.11:599.323.4

#### CYTOGENETICS OF ROBERTSONIAN TRANSLOCATIONS IN MAMMALS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 272, No 1, Sep 83  
(manuscript received 24 Feb 83) pp 204-207

DEMIN, Yu. S., SAFRONOVA, L. D. and PANEVINA, N. D., Institute of Evolutionary Morphology and Ecology of Animals imeni A. N. Severtsev, Moscow (Presented by Academician N. P. Dubinin 15 Feb 83)

[Abstract] Cytogenetic substantiation of the fact that Robertsonian translocations are formed with the aid of a metabolic mechanism was carried out on the basis of analysis of synaptic complexes in the male house-mouse *Mus musculus* L. It was shown that at least some Robertsonian translocations are formed with participation of a metabolic mechanism. Generalization of electron-microscopy data from studies of meiosis in interspecies heterozygotes indicates that Robertsonian fusion arises as a result of a translocation event and does not differ structurally from other metabolic type chromosome reconstructions. The "synaptic adjustment" hypothesis is used to explain the penetrability and varying degree of expressiveness of anomalies of synaptic complexes in structural heterozygotes Rb/+. Light-microscopy data reconfirmed the hypothesis of synaptic adaptation in meiosis in mammals, based on electron-microscopy studies. Figures 3; references 8: 3 Russian, 5 Western.  
[055-2791]

# PATHWAYS OF DNA REPAIR IN ESCHERICHIA COLI K-12 CELLS DURING MUTATION INDUCTION BY POTASSIUM DICHROMATE

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 272, No 1, Sep 83  
(manuscript received 4 Mar 83) pp 208-210

KALININA, L. M. and MINSEYITOVA, S. R., Institute of General Genetics, USSR  
Academy of Sciences, Moscow (Presented by Academician N. P. Dubinin, 24 Feb 83)

[Abstract] Study of lethal action of potassium dichromate in E. coli K-12 cells indicated that strains of bacteria defective at specific stages of recombination repair showed various sensitivity to processing by the mutagen. The most sensitive to the effect of the mutagen were  $rec^B$  and  $rec^F$  cell-mutants in which recombination repair was prevented. The mutagen had less effect on the survival rate of mutant  $rec^B$  and  $rec^C$  and  $rec^B Rec^C Sbc^B$  cells. Use of a  $1.7 \cdot 10^{-3}M$  concentration of mutagen led to a statistically significant increase of mutagenesis in wild type cells and mutant  $rec^F$ . Results of the study indicated that genes of the  $rec$  group which control processes of recombination repair participate in formation of mutations in E. coli cells due to the effect of potassium dichromate. Data obtained concerning the lethal and mutagenic effect of potassium dichromate in E. coli cells indicate that  $recA$ ,  $recB$   $recC$ ,  $sbcB$  and  $recF$  cells participate in control of pathways of repair and mutagenesis. Figures 1; references 4: 1 Russian, 3 Western. [055-2791]

UDC 576.858+575.173

# MODEL FOR STUDY IN VITRO OF DNA DAMAGE REPAIR PROCESSES: HUMAN CELLS CHRONICALLY INFECTED WITH RNA-CONTAINING VIRUSES WITH INHIBITED SYSTEM OF REPAIR

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 272, No 1, Sep 83  
(manuscript received 4 Mar 83) pp 211-213

KOLONINA, I. V., DESYATSKOVA, R. G., BOGOMOLOVA, N. N. and ZASUKHINA, G. L.,  
Institute of General Genetics, USSR Academy of Sciences, Moscow; Moscow  
Scientific Research Institute of Virus Preparations (Presented by Academician  
Ye. M. Krepson 8 Feb 83)

[Abstract] Processes of recombination of DNA breaks, induced by 4-nitro-quinoline-1-oxide (4NQO) in human cells cultures chronically infected with rabies, rubella or parotitis viruses, pertaining to various systematic groups of RNA-containing viruses, were studied. The stage of DNA repair being blocked in the chronically-infected system was determined by experiments with the use of mitomycin C (MC) and bleomycin as DNA-damaging agents or cells chronically-infected with rubella virus. Three systems chronically infected by the viruses were studied. It was found that inhibition of resynthesis of

DNA after processing cells with 4-NQO is probably explained by selection, in the cell population, predominantly of cells with partially or completely defective repair system or with the rise of disturbances of the cellular respiration system. Study of repair of DNA injuries induced by MC in HEp-2 and Hep-2BK cells showed a decrease in the percent of two-strand DNA in comparison with that of the control in both types of cells within four hours of incubation of the culture while 20-hour incubation of the cell cultures led to practically complete repair of DNA in HEp-2 cells and the percent of two-strand DNA in HEp-2BK cells continued to decrease. Repair of DNA breaks caused by bleomycin proceeded with equal intensity in both the HEp-2BK culture and in the uninfected culture. Inhibition of cellular DNA repair is registered in human cells cultures of HEp-2 and L-41 chronically infected with non-oncogenic rabies, rebecca and parotitis viruses. The experiments indicated that inhibition of reparative processes in human cells cultures, chronically infected with RNA-containing viruses, is due to a general mechanism associated with blocking of repair at the level of reparative synthesis of DNA. Human cells, chronically infected with viruses may serve as a model for studying mechanisms of repair of DNA damage. Figures 2; references 6: 3 Russian, 3 Western.

[055-2791]

UDC 615.371:579.852.13].015.46:612.112.94.017.1

STUDY OF IMMUNOCOMPETENT CELL POPULATIONS WITH RECEPTOR OR PROTECTIVE ANTHRAX ANTIGEN FOLLOWING IMMUNIZATION OF APES WITH STI ANTHRAX VACCINE

Moscow IMMUNOLOGIYA In Russian No 4, Jul-Aug 83 (manuscript received 7 Jul 81)  
pp 50-53

SMIRNOV, V. S., MERETSKOV, V. V., LEBEDINSKIY, V. A., DERBIN, M. I., GARIN, N. S.,  
KUZ'MICH, M. K. and TARUMOV, V. S.

[Abstract] A study was made of quantitative changes in the population of immunocompetent cells in the peripheral blood of baboons at various times after immunization with STI anthrax vaccine. Hemadrayas baboons were selected because they have produced the most reliable results in studies of anthrax vaccine effectiveness. Four groups of 18 to 20 apes were studied: group 1 received the vaccine subcutaneously by needleless injector at  $5 \cdot 10^7$  spores, group 2 by inhalation of  $5.35 \cdot 10^8$  spores, group 3 by subcutaneous needleless injection of STI vaccine,  $5 \cdot 10^7$  spores. Group 4 was the control. Immunocompetent cells were determined by the Boehm rosette formation reaction with sheep erythrocytes sensitized by highly purified protective bac.anthraxis antigen preparation. A reliable increase in the number of immunocompetent lymphocytes with receptors for the antigens was established in baboons immunized by the STI vaccine. The dynamics of changes in immunocompetent cell content was determined by studies on days 7, 30, 90 and 180 after immunization. The dynamics were found to be independent of the type of vaccine and method of application. The immunocompetent cell population increased until 90 days after immunization, then dropped sharply, from 60 to 20%, by 180 days after vaccination. Figure 1; references 19 (Russian).  
[063-6508]

ANTIGENICITY AND REACTOGENICITY OF CONCENTRATED, PURIFIED, UVINACTIVATED  
RABIES VACCINE

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 9,  
Sep 83 (manuscript received 19 Nov 82) pp 47-50

DULINA, A. V., MOROGOVA, V. M., SHAFYEVA, R. S. and POGREBNYAK, Ye. M.,  
Ufa Scientific Research Institute of Vaccines and Sera imeni I. I. Mechnikov;  
Ufa Municipal Sanitary-Epidemiologic Station

[Abstract] A concentrated, purified, and UV-inactivated rabies vaccine (Vnukovo-32 strain; 33-40 passages in primary Syrian hamster kidneys cells) was tested for antigenicity and reactogenicity in chinchilla rabbits and human subjects. The rabbits responded with virus-neutralizing antibodies, continued to gain weight, and exhibited no untoward effects as a result of immunization with the attenuated vaccine. Twenty human subjects, 18 to 35 years of age, consisted of 5 volunteers and 15 subjects either bitten by cats or dogs in an area endemic for rabies or were exposed to the saliva from such animals. The vaccine (1.5 ml/injection) was administered intramuscularly on days, 0, 7, and 21, and sera were collected on days 8, 30, and 45 and tested for neutralizing antibodies and passive hemagglutination. Nineteen patients responded by antibody production by day 8, and all patients had positive neutralizing and passive hemagglutination tests by day 45. By day 45 the mean geometric neutralizing titer for the group was 1:200, and the corresponding titer for the passive hemagglutination serology was 1:231. The UV-inactivated vaccine was thus shown to be both an effective immunogen and a safe biological. References 9: 6 Russian, 3 Western.  
[124-12172]

## VACCINIA VIRUS PROTECTIVE ANTIGENS

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 10,  
Oct 83 (manuscript received 9 Mar 83) pp 82-88

ZEZEROV, Ye. G., FILATENKOV, A. G. and YAROV, A. I.

[Abstract] Although smallpox has been eradicated, many related viruses circulate in nature and studies on their antigenicity remain of interest. Evaluation of the antigenic composition of vaccinia virus strains L-IVP, B-51, and EM-63 has revealed that the polypeptide composition of the former two strains is quite similar, while EM-63 either lacks a 34,000 dalton polypeptide, or it has a different electrophoretic mobility for some reason. Polyacrylamide gel electrophoresis of the envelope proteins of L-IVP revealed the presence of 10 polypeptides migrating in 7 fractions. Virus-neutralizing antibodies in rabbits were induced primarily by 3 fractions accounting for 4-5 peptides with molecular weights in the 31,000 to 54,000 dalton range. This group of

peptides represented 19% of the protein of the virus; the highest titer obtained was 1:15,625. Lower molecular weight peptides were relatively unimportant in the induction of specific neutralizing antibodies. Figures 3; references 30: 11 Russian, 19 Western.  
[141-12172]

UDC 615.371:579.842.22].012

#### SOLUBLE ANTIGEN-BASED VACCINE FOR SPECIFIC THERAPY OF PROTEUS INFECTIONS

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 10, Oct 83 (manuscript received 9 Mar 83) pp 88-92

KREYNIN, L. S., KAVERINA, K. G., LEVINA, L. A., LANDSMAN, N. M., ZAYTSEVA, Ye. V., BUTAKOVA, L. Yu., GRIGOR'YEV, N. I., ZDANOVSKAYA, L. K., MEN'SHIKOV, D. D., YANISKER, G. Ya. and ROMANENKO, E. Ye., Central Scientific Research Institute of Vaccines and Sera imeni I. I. Mechnikov, Moscow

[Abstract] Description is provided of the preparation of a soluble antigenic preparation from *Proteus* cells by disintegrating them with hydroxylamine, the preparation represented ca. 15% of the dry weight of the microbial cells. The antigenic preparation (AP) consisted of ca. 50% protein, 35% carbohydrates, 5% nucleic acids, and ca. 8% ash. Immunophoretic analysis with hyperimmune rabbit sera revealed 3-5 distinct lines of precipitation. In mice, guinea pigs and rabbits AP was nontoxic whether injected as a large single dose or multiple small doses, and was active in protecting mice and rabbits against the development of *proteus* infections. Subcutaneous injections of male and female volunteers (0.05-0.80 mg) resulted, in some, in temperature elevations (38-39.2°C) which did not exceed 24 h; no other adverse effects were noted. Immunized volunteers retained hemagglutinin titers ranging from 1:640 to 1:5120 for more than two years after immunization, while treatment of patients with AP was deemed to be clinically effective. References 16: 8 Russian, 8 Western.  
[141-12172]

#### COMPARISON OF HEMAGGLUTINATION AND IMMUNOENZYMATIC METHODS IN PLAGUE DIAGNOSIS

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 10, Oct 83 pp 102-103

GOLUBINSKIY, Ye. P., RUDNIK, M. P., MERINOV, S. P., KOLOSOV, V. M., FEDOROV, Yu. P. and RYBIN, S. A., Irkutsk

[Abstract] Standard hemagglutination tests used in the diagnosis of plague were compared with the sensitivity and completion time of ELISA [Cavanaugh, et al., 1980] used for the same purpose. Studies with sera obtained from *susliks* and *pikas* showed that of the several hundred sera tested 11-16% were positive by the standard hemagglutination methods, whereas ELISA revealed 72%

to be positive for specific antibodies. In addition, whereas the titers in the hemagglutination tests ranged from 1:20 to 1:10240, the greater sensitivity of ELISA was demonstrated by a range of 1:320 to 1:163840. In view of the fact that ELISA can be carried out within a time span of 2.5-3 h, it appears that ELISA constitutes a promising diagnostic modality for epidemiologic and clinical studies.

[141-12172]

## LASER EFFECTS

UDC 616.089:616.988.15:621.375.826

### LASER SCALPEL EXCISION OF PERIANAL CONDYLOMA

Ashkhabad ZDRAVOOKHRANENIYE TURKMENISTANA in Russian No 3, May 83 pp 45-46

BABAYEV, Kh. B. and KADAMOV, G. K., Department of Hospital Surgery, No. 2 (chief - Professor O. G. Babayev), Turkmen Order of People's Friendship State Medical Institute (rector - Professor N. N. Nurmamedov)

[Abstract] The authors have used the "Skal'pel'-1" Soviet surgical laser to excise perianal condylomas in five patients. When large condylomas are removed by photohydraulic preparation with subsequent defocused laser beam treatment, it is not necessary to apply sutures to close the skin defect thus formed, since a thin dry light brown crust is formed on the surface of the wound which serves as a biologic barrier. Healing occurs rapidly beneath the film. The operation is bloodless, nontraumatic and can be used to coagulate small condylomas within the limits of the healthy tissue. The cosmetic result is good. Two case histories are presented. References 5: 4 Russian, 1 Western.

[068-6508]

UDC 577.3+535.217

### SPECIFICITY OF NONLINEAR LASER SCISSION OF DNA

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 272, No 1, Sep 83 (manuscript received 2 Mar 83) pp 217-220

BENIMETSKAYA, L. Z., KOZIONOV, A. L., NOVOZHILOV, S. Yu. and SHTOKMAN, M. I., Institute of Automation and Electrometry, Siberian Division USSR Academy of Sciences, Novosibirsk (Presented by Academician D. G. Knorre 11 Feb 83)

[Abstract] The fact that nonlinear laser scission proceeds only via DNA-dye complexes was demonstrated experimentally. This involved changing the bonding constant of the dye  $k_A$  to ensure constancy of light energy completely absorbed in the solution. Change of  $k_A$  was performed by two methods: replacement of 8-methoxypsoralene by another dye of the same coumaric series which is closely related to 8-MOP in spectral properties and change of bonding of the 8-MOP dye



itself by varying the ionic strength of the solution. Purified DNA of phage T 7 was used. The experiments confirmed the specificity of nonlinear laser scission, i.e., that it proceeds only via DNA-dye complexes. The fact that nonlinear laser scission is not induced by free dye in the solution excludes the possibility of participation in nonlinear laser scission of nonspecific effects accompanying irradiation such as heat release into the solution and generation of radicals by free dye. Figures 2; references 12: 8 Russian, 4 Western.  
[055-2791]

MECHANISM OF ACTION OF INFRASOUND ON ANIMALS AND MAN (LITERATURE REVIEW)

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA No 9, Sep 83  
(manuscript received 29 Nov 82) pp 35-37

ALEKSEYEV, S. V. and MOZZHUKHINA, N. A., Sanitary-Hygiene Medical Institute,  
Leningrad

[Abstract] This literature review discusses experimental studies of infrasound effects. Present concepts of the mechanism which vary with frequency and intensity of action of infrasound on the body are largely based on extrapolation of concepts concerning the mechanism of action of noise and general vibration into the infrasound range. The means of perception of infrasound is still unclear. The detailed processes of auditory detection of infrasound are also unknown. There is no doubt that there is a cochlear path of infrasound, but it is not known whether this is the only path. Data indicating the possibility of a vestibular path of action of infrasound are noted. The resonant theory of action of infrasound, assuming a leading role for enteroseption and proprioception, has been widely discussed. Some researchers suggest that infrasound acts primarily on intracellular membranes. It has been shown that infrasound causes changes in EEG activity, heart rate and respiration rate, indicating CNS involvement in the reaction. Cellular reactions of the parenchymatous organs and changes in submicroscopic cell structures have been observed in response to infrasound. Long-term exposure to infrasound causes significant destructive changes in the cells of the myocardium, liver, pancreas and brain as well as disorders of protein metabolism in the liver and pancreas cells and in the ratio of protein fractions in the blood serum. Regeneration processes are also activated by long-term exposure, increasing by the 30th day of exposure. References 36: 19 Russian, 17 Western.  
[067-6508]

## REFLECTION OF SIGNIFICANCE OF ACOUSTICAL STIMULI IN EVOKED POTENTIALS DURING PROGRAMMED HUMAN MOTION

Leningrad FIZIOLOGICHESKIY ZHURNAL IMENI I. M. SECHENOVA in Russian Vol 49, No 9, 83 (manuscript received 10 Jan 83) pp 1236-1238

NDINGA, A., DOROSHENKO, V. A. and KULIKOV, G. A., Physiological Institute imeni A. A. Ukhtomskiy, Leningrad State University, Leningrad

[Abstract] The nature of evoked potentials in various areas of the human brain following sound stimuli of various types was studied in 4 healthy subjects of 18-23 years of age. Four combinations of weak and strong signals were used that called for reactions with left or right hand or no reaction at all; weak signals were 20 decibels, strong ones 40 decibels above the threshold of subjective sensing. EEG monopolar recordings showed that the warning signals caused greater reaction amplitudes than the commands themselves. The warning as administered did not give the subjects time to prepare to react to the command stimulus. The combined intensities of the two signals determined the type of reaction, rather than the intensity of either signal in isolation. Component P<sub>300</sub>, which is usually related to evaluation of stimuli, was stimulated by a slow wave reflecting the interaction of lobal programming centers of the brain. Figures 2; references 13: 7 Russian, 6 Western. [070-12131]

## RESPONSES OF HYPOTHALAMIC SUPRAOPTIC AND PARAVENTRICULAR NUCLEI TO COOLING IN RATS UNDER ALTERED GAS ENVIRONMENT CONDITIONS

Leningrad FIZIOLOGICHESKIY ZHURNAL IMENI I. M. SECHENOVA in Russian Vol 49, No 9, 83 (manuscript received 21 Oct 82) pp 1238-1243

SERGEYEVA, Ye. S. and MOGUTOV, S. S., Central Scientific Research Laboratory, Leningrad Pediatric Medical Institute

[Abstract] Combined effects of altered gas environment and temperature have been studied as possible factors in improving bodily resistance to extreme conditions, such as those causing hypothermia and acute brain ischemia. To further knowledge of these effects, the authors studied 80 rats cooled to ca. 20.4°C rectal temperature with altered oxygen and CO<sub>2</sub> content in a chamber. Results of chemical analysis of histological material at various time intervals revealed a phasal character in conditions of increasing oxygen deficiency and hypercapnia. These changes are described at intervals of 20, 50, 70, 90, and 120 minutes, as well as 48 hours after the beginning of the experiments. The various changes were regarded to result from gradual alterations of adreno-cholinergic effects. The combined effects of temperature and oxygen-CO<sub>2</sub> variations, in contrast to other stress factors, brought functional shifts

in supraoptic and paraventricular nuclei of the rats' bodies. The reaction of neurosecretory cells of the hypothalamus depends in many ways on the growing hypothermal conditions as organism reactivity declines. Figures 3; references 15: 12 Russian, 3 Western.  
[070-12131]

UDC 612.8229.1.08

#### CONTINUOUS MEASURING OF GLUCOSE CONCENTRATION IN CEREBRAL TISSUE USING ENZYME MICROELEMENTS

Leningrad FIZIOLOGICHESKIY ZHURNAL IMENI I. M. SECHENOVA in Russian Vol 49, No 9, 83 (manuscript received 17 Jan 83) pp 1247-1249

KILIBAYEVA, G. S. and DEMCHENKO, I. T., Laboratory of Cerebral Blood Circulation, Institute of Evolutionary Physiology and Biochemistry imeni I. M. Sechenov, USSR Academy of Sciences, Leningrad

[Abstract] Polarographic platinum electrodes have been developed over the years since their first use in 1949 to measure both hydrogen peroxide and glucose in a given location. The electrodes currently used are coated with a thin layer of glucooxidase, which is isolated from other substances by a glucose-permeable membrane. The present study reports on the development of a much smaller electrode for the same measurements. After manufacturing an electrode 30-35mm in length and 30-50 mkm in diameter, the authors coated it with platinum black by an electrolytic process, then with glucooxidase fixed with 7.4 pH glutaraldehyde, and finally with a cellulose-diacetate membrane. Since the resulting electrode lost sensitivity rapidly during storage, its final production stages were performed on the day of experimental use. The tests showed this nontraumatic electrode to be highly sensitive to glucose in the cortex and white matter of test rats' brains. It shows promise for implantation in numerous organs. Figures 2; references 6: 1 Russian, 5 Western.  
[070-12131]

UDC 612.55:616-080.583.29

#### ANALYSIS OF MECHANISM OF HYPOTHERMIC EFFECT OF NEUROTROPIC SUBSTANCES

Leningrad FIZIOLOGICHESKIY ZHURNAL IMENI SECHENOVA in Russian Vol 49, No 8, Aug 83 (manuscript received 7 Sep 82) pp 1074-1078

LUPANDIN, Yu. V., Laboratory of Neurophysiology of Thermoreception and Heat Exchange (director Yu. V. Lupandin), State University imeni O. V. Kuusinen, Petrozavodsk

[Abstract] An analysis is presented of the mechanism of suppression of cold tremor (the primary source of addition of heat under low temperature conditions) following intravenous and intraventricular administration of mediator-type neurotropics. Studies were performed on 67 mature cats under chloral-urethane narcosis with metadine premedication, recording the bioelectric

activity of various muscles on an electromyograph. The mediator substances were introduced through a cannula into the external jugular vein and into the third ventricle of the brain. The substances administered intraventricularly were dissolved in 0.2 ml distilled water at 1/30 of the minimum effective dose established for intravenous administration. The results of the studies indicate that the primary component in the mechanism of hypothermic effect of oxotremorin, nicotine, isadrine and seduxen is activation of the polyneurochemical system of the brain stem, inhibiting the activity of motor spinal centers. This inhibition of postural activity causes the hypothalamic center of thermal regulation to be incapable of maintaining the necessary level of contractile thermogenesis. All of this places in doubt the possibility of finding any centrally-acting neurotropic mediator-type substance which can reduce body temperature without influencing central mechanisms of regulation of muscular tonus and related contractile thermogenesis. A diagram illustrates the mechanism of the depressing effect of neurotropic substances on cold tremor. The cold receptors tend to excite the hypothalamus and reticular formation as well as the motoneuron pool, while the inhibitor substances inhibit only the reticular formation. Figure 1; references 21: 12 Russian, 9 Western.  
[071-6508]

UDC 612.014.42.424.5

#### NARCOSIS OF LABORATORY ANIMALS WITH COMBINED DIRECT AND PULSED CURRENTS

Leningrad FIZIOLOGICHESKIY ZHURNAL IMENI SECHENOVA in Russian Vol 49, No 8, Aug 83 (manuscript received 15 Sep 82) pp 1120-1123

LEBEDEV, V. P., KATSNEL'SON, Ya. S., LEOSKO, V. A., BARANOVSKIY, A. L. and SHLEMIS, G. I., Laboratory of Circulatory Physiology (director V. V. Orlov), Institute of Physiology imeni I. P. Pavlov, USSR Academy of Sciences; Laboratory of Anesthesiology (director V. A. Leosko) All-Union Scientific Research Institute of Pulmonology, USSR Ministry of Health, Leningrad

[Abstract] Electronarcosis using pulsed currents, which has been experimentally tested repeatedly and is presently in clinical use, meets the requirements for controllable anesthesia without after-effect demanded by experimental work. However, side effects such as convulsions, respiratory and cardiac disorders, and nonreproducibility of effect have hindered the use of this method. The purpose of the present work was to select parameters of electric narcosis capable of achieving reproducible anesthesia without typical complications in experimental animals. Most of the experiments were performed on rabbits with the electric current administered by subcutaneous needle electrodes, the cathode in the frontal area, two anodes behind the ears. The effectiveness of anesthesia was later tested in experiments on cats and dogs, with subcutaneous plate type electrodes, by measuring the motor reactions to mechanical stimulation. The "elektronarkoz-1" apparatus used could generate rectangular or sawtoothed current pulses at 50 Hz to 3 KHz in combination with a dc component in addition to the pulsed current, total current not over 3 mA.

It was found that the combination of constant dc and pulsed currents could produce stable, reproducible electronarcosis with spontaneous respiration and stable blood pressure. The dc component was 2 to 5 times stronger than the pulsating component, which consisted either of rectangular pulses or trains of high frequency pulses, frequency 10 KHz, duty factor 0.5. Best effects were achieved with a constant dc component of 4-6 mA, pulsed component at frequency 80 Hz, pulse length 3-5 ms, 20% of the current of the constant component. Figure 1; references 5: 4 Russian, 1 Western.  
[071-6508]

#### VVEDENSKIY PARADOX IN MODERN PHYSIOLOGY

Moscow PRIRODA in Russian No 10, Oct 83 pp 28-33

MATYUSHKIN, D. P., professor, doctor of medical sciences, Institute of Physiology imeni A. A. Ukhtomskiy, Leningrad State University

[Abstract] A discussion is presented of the Vvedenskiy paradox, which represents a decrease in the electrical response of a cocaine-treated nerve to a supramaximal electric stimulus, in light of modern electrophysiological knowledge. Using as examples saltatory conduction and a brief description of action potentials in relation to membrane polarization/depolarization changes, the paradox can be explained on the basis of increased nerve membrane polarization. Such a change affects adjacent nerve fibers in a nerve and leads to 'cable' effects in which conduction is decreased as a result of negative interaction among the electric fields of individual fibers. Figures 7; references 4 (Russian).  
[114-12172]

UDC 612.821.6+612.822.3

#### CEREBRAL BIOELECTROCHEMICAL ACTIVITY AT METALLIC ELECTRODE SURFACE

Moscow USPECKHI FIZIOLOGICHESKIKH NAUK in Russian Vol 14, No 4, Jul-Sep 83  
pp 6-42

SHVETS-TENETA-GURIY, T. B., Institute of Higher Nervous Activity and Neurophysiology, USSR Academy of Sciences, Moscow

[Abstract] A review of the literature on bioelectrochemical activity is presented, with particular reference to the CNS. Since it has become firmly established that measurement of bioelectrochemical potentials constitutes an analytic approach to local metabolic activity, such studies have been expanded to the study of brain biochemistry in relation to various neurophysiological states and functional levels. Special gold and platinum electrodes have been devised for measuring potential changes in the cortex, intercellular space, and the cerebrospinal fluid. Changes in such potentials reflect a release or

secretion into the intercellular space or cerebrospinal fluid of various metabolites which alter the redox state and allow for an evaluation of spatio-temporal processes in the brain. Such metabolites as are secreted may, perhaps, have functional significance on the level of the various neurotransmitters, neurohormones, and endogenous opiates. Figures 9; references 182: 84 Russian, 98 Western.  
[131-12172]

UDC 614.72:661.993]-07:616.8-099.091-076

MORPHOLOGICAL CRITERIA AND SYSTEM OF INDICES FOR EVALUATING NEUROTOXICITY OF ENVIRONMENTAL CHEMICAL FACTORS: CARBON MONOXIDE MODEL

Moscow GIGIYENA I SANITARIYA in Russian No 10, Oct 83 (manuscript received 20 Apr 83) pp 31-33

VONASHEVSKAYA, T. I., SHAMARIN, A. A., KESAREV, V. S. and YURASOVA, O. I., Scientific Research Institute of General and Communal Hygiene imeni A. N. Sysin, USSR Academy of Medical Sciences, Moscow; Scientific Research Brain Institute of the All-Union Scientific Center for Mental Health, USSR Academy of Medical Sciences, Moscow

[Abstract] Outbred male rats were employed in a study designed to provide evaluative criteria on the neurotoxicity of environmental chemicals, by exposing the rats to 20-400 mg/m<sup>3</sup> of CO for various lengths of time and subsequent morphological and histochemical examination of the brain. The results showed that subtle morphological changes were discernible before any functionally-evident changes became apparent. Morphometric analysis of the neurons and glial elements, determination of chromatolysis and hyperchromatosis, the perineuronal index, and alterations in the activities of succinate and lactate dehydrogenases and glucose-6-phosphate dehydrogenase in layer V of the sensorimotor cortex provided an indication of the degree to which the CNS was affected by the CO exposure. In addition, data on the tissue levels of P-32 and Zn-65 yielded information on the patency of the blood-brain barrier and lipid synthesis. References 9: 1 Polish, 4 Russian, 4 Western.  
[130-12172]

POROUS STRUCTURE OF ACTIVE CHARCOALS AS CRITERION OF ANALYSIS OF MOLECULAR  
HEMOSORPTION MECHANISMS AND PURPOSEFUL SELECTION OF HEMOSORBENTS

Kiev DOKLADY AKADEMII NAUK UKRAINSKOY SSR Seriya B Geologicheskiye, khimicheskiye i biologicheskiye nauki in Russian No 9, Sep 83 (manuscript received 5 Apr 83) pp 80-84

TERNOVOY, K. S., academician UkSSR Academy of Sciences, KARTEL', N. T. and STRELKO, V. V., Institute of General and Inorganic Chemistry, UkSSR Academy of Sciences

[Abstract] Criteria are presented of purposeful selection of carbon hemosorbents for preferred separation from the organism of various microorganisms and even some pathological blood cells as well as metabolites and protein complexes. Best results were obtained from use of a hemosorbent when the dimensions of endotoxins or exotoxins were less than the effective diameter of the hemosorbent pores. Chemical factors are less important. The ratio between the dimensions of adsorbed objects and the radii of sorbent pores usable for them is illustrated and discussed. Properties of six brands of hemosorbents and groups of diseases responding most readily to hemosorption are tabulated. Figures 2; references 11: 8 Russian, 3 Western.  
[057-2791]



UDC 616-001.17-082

ORGANIZING AND IMPLEMENTING MEDICAL CARE FOR BURN PATIENTS UNDER DISASTER CONDITIONS

Kiev FLINICHESKAYA KHIRURGIYA in Russian No 3, Mar 83 (manuscript received 1 Dec 82) pp 36-40

POVSTYANOV, N. Ye. and POLISHCHUK, S. A., Kiev Scientific Research Institute of Hematology and Blood Transfusion; Donetsk State Medical Institute imeni A. M. Gorky

[Abstract] A review is provided of the handling of small and large groups of patients suffering from burns, with emphasis on the need for well-trained medical teams specializing in such cases (combustionologists [sic]). Generally, speaking, the quite efficient network of medical emergency services in Ukraine provides rapid on-site assistance and transportation to specialized hospitals or other facilities established to handle a variety of emergency cases. The importance of triage is also underscored since most burns patients present a similar appearance, and, referral to the appropriate specialists may be complicated on diagnostic and emotional grounds. Optimum medical assistance under any disaster condition depends on a combination of administrative skills, discipline, high-level professionalism and clinical competence. References 15: 13 Russian, 2 Western.  
[168-12172]

MICROBIOLOGY

UDC 579.841.93.083.33:579.842.23.083.33

ANTIGENIC COMPLEXES RESPONSIBLE FOR CROSS-REACTION BETWEEN BRUCELLA SP. AND YERSINIA ENTEROCOLITICA 09

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 9, Sep 83 (manuscript received 26 Oct 82) pp 28-33

ZHELUDKOV, M. M., DRANOVSKAYA, Ye. A. and ZALKIND, G. I., Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, USSR Academy of Medical Sciences, Moscow

[Abstract] Immunological and physicochemical characteristics of protein and cell-wall lipopolysaccharide (LPS) antigens of *Yersinia enterocolitica* 09 and *Brucella* sp. (*B. abortus*, *B. melitensis*, *B. ovis*, *B. canis*, *B. suis*) were evaluated to determine the factor(s) responsible for serologic cross-reaction between these two genera. Quantitative determinations showed that *Y. enterocolitica* contained 1.5 times as much protein antigens as the *Brucella* sp., but a two-fold lower concentration of LPS. In addition, the *Y. enterocolitica* LPS contains more protein and less of the high-molecular weight lipopolysaccharide component than do the *Brucella* LPS complexes, and this presumably accounts for the weaker antigenicity and less toxic properties of *Y. enterocolitica* cell wall. However, the immunologic studies did establish that cross-reaction between *Yersinia* and *Brucella* is due to common antigenic determinants in LPS. Figures 8; references 17: 1 Czech, 6 Russian, 10 Western.  
[124-12172]

UDC 579.843.95:579.222:577.152.429].083.12

ISOLATION AND PURIFICATION OF YERSINIA PESTIS NEURAMINIDASE

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 9, Sep 83 (manuscript received 18 Nov 82) pp 70-74

SHIMANYUK, N. Ya. and MISHAN'KIN, B. N., Rostov-on-Don Anti plague Institute

[Abstract] Details are provided on the isolation and 192-fold purification of *Yersinia pestis* neuraminidase by standard methods employed in enzymatic research. The enzyme was found to have a molecular weight of approximately

75,000, a maximum activity at pH 5.6-6.6, and is a glycoprotein relatively resistant to trypsin and pronase but subject to rapid inactivation by  $\alpha$ -glucosidase. Additional studies showed that it is relatively thermostable and has high affinity for high molecular weight substrates, is activated by calcium, barium and manganese ions, and inhibited by EDTA, urea, sodium dodecyl sulfate, and  $\text{Fe}^{++}$ . Figures 5; references 16: 11 Russian, 4 Western. [124-12172]

UDC 579.8.083.13

#### INHIBITION AND STIMULATION OF MICROBIAL VIABILITY DURING CULTIVATION

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 10, Oct 83 (manuscript received 13 Apr 83) pp 3-8

MEL'NIKOVA, V. A., Central Scientific Research Institute of Vaccines and Sera imeni I. I. Mechnikov, Moscow

[Abstract] A review is presented of factors that enhance and reduce microbial viability during various methods of cultivation. Basically, factors that affect microbial growth and development can be divided into two categories: intracellular and extracellular. The intracellular factors consist of structural features and metabolic characteristics, while the extracellular factors are represented by environmental conditions. The latter may either be stimulatory, limiting, or inhibitory. Although various arguments may be advanced to define a factor one way or another, stimulatory factors generally are regarded as those that enhance the growth rate, inhibitory those that retard the rate of growth, and, limiting, those that do not permit an organism to exercise its full potential growth rate. A better understanding of the interplay of these various factors will contribute much to better control of microbial cultivation under controlled conditions and formulation of optimum nutrient media. References 44: 26 Russian, 18 Western. [141-12172]

UDC 579.843.95:579.222:547.295

#### COMPOSITION OF HIGHER FATTY ACIDS IN INTRASPECIFIC TAXONS OF FRANCISELLA TULARENSIS

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 10, Oct 83 (manuscript received 15 Feb 83) pp 25-28

MESHCHERYAKOVA, I. S. and OLSUF'YEV, N. G., Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, USSR Academy of Medical Sciences, Moscow

[Abstract] Gas and liquid chromatography were used to study the composition of the higher fatty acids in holarctic, nonarctic and Central Asian strains of Francisella tularensis in order to determine whether such data contain

sufficient information to be of use in taxonomic studies. Evaluation of 27 strains demonstrated that all possess saturated and unsaturated long straight-chain C<sub>10</sub> to C<sub>26</sub> fatty acids, as well as hydroxy acids (OH-C<sub>16:0</sub> and OH-C<sub>18:0</sub>). Determination of quantitative differences among certain of the fatty acids (C<sub>10:0</sub>, C<sub>24:0</sub>) in the subspecies indicated that they may constitute differential criteria useful in further delineation of intraspecific taxons. References 17: 9 Russian, 8 Western.  
[141-12172]

UDC 579.842.14:579.61:616-078.73

IMMUNOELECTROPHORETIC ANALYSIS OF ANTIGENIC COMPOSITION OF SALMONELLA TYPHI DURING L-TRANSFORMATION AND REVERSION

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 10, Oct 83 (manuscript received 18 Jan 83) pp 29-32

STEPANOVA, L. K., GORELOV, A. L., SERGEYEVA, N. S., LEVINA, G. A., BELAYA, Yu. A. and PROZOROVSKIY, S. V., Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, USSR Academy of Medical Sciences, Moscow

[Abstract] An immunoelectrophoretic analysis was carried out on the O, Vi, K and H antigens of Salmonella typhi bacterial cells, their L- forms, and cells obtained by reversion of the L-forms. The L-forms were found to retain small quantities of the O and K antigens present in the parental cells, while the revertant cells could not be distinguished from the parental cells on this basis. The L-forms, in addition, appeared to lack the Vi antigen and contained much smaller concentrations of the H antigen. These observations show that L-form formation involves significant alteration of the antigenic spectrum of S. typhi, and that the antigenic profile is fully recoverable on reversion to the standard bacterial cell. Figures 3; references 12: 10 Russian, 2 Western.  
[141-12172]

UDC 579.842.23.04:(546.33+546.272.4

EFFECTS OF SODIUM CHLORIDE ON YERSINIA PSEUDOTUBERCULOSIS AND Y. ENTEROCOLITICA

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 10, Oct 83 (manuscript received 14 Dec 82) pp 35-38

SIVOLODSKIY, Ye. P., KOROLYUK, A. M. and REMEZOV, A. P., Military Medical Academy imeni S. M. Kirov, Leningrad

[Abstract] Studies were conducted with 60 strains of Yersinia pseudotuberculosis and 75 strains of Y. enterocolitica to determine their susceptibility to NaCl. Comparative data were also obtained for 158 specimens of other urease positive

enterics (*P. mirabilis*, *P. vulgaris*, *C. freundii*, *Klebsiella pneumoniae*, *Enterobacter cloacae*, *Serratia marcescens*). Evaluation of the results obtained on different media showed that *Y. pseudotuberculosis* was much more susceptible to NaCl than *Y. enterocolitica*. However, both *Yersinia* species were much more susceptible to NaCl than the other urease-positive enteric bacteria exposed to this salt. It appears that the bacteriostatic properties of NaCl can be used for the differentiation between *Y. enterocolitica* and *Y. pseudotuberculosis*, as well as between the *Yersinia* sp. and other urease positive enterics by employing Hottinger's broth with 40 g/liter NaCl, or nutrient agar with 30 g/liter NaCl. References 7: 2 Russian, 5 Western.  
[141-12172]

UDC 616.98:579.842.14]-07:616.155.33-008.13

CHANGES IN MACROPHAGE LEVEL OF cAMP DURING PHAGOCYTOSIS OF *SALMONELLA* TYPHIMURIUM. PART 2. EFFECTS OF MICROBIAL VIRULENCE AND MACROPHAGE IMMUNE STATUS ON TIME COURSE OF cAMP CHANGES

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 10, Oct 83 (manuscript received 13 Apr 83) pp 60-62

BOYCHENKO, M. N. and ZHILINA, I. L., Second Moscow Medical Institute imeni N. I. Pirogov

[Abstract] Temporal changes in macrophage cAMP levels during phagocytosis of *Salmonella typhimurium* were traced in peritoneal macrophages derived from immune and nonimmune mice (infected with *S. typhimurium*), using virulent *S. typhimurium* 415, a heat-inactivated preparation of this bacterium, and avirulent *S. typhimurium* B-24. Phagocytosis of *S. typhimurium* 415 by nonimmune macrophages resulted in a biphasic rise in cellular cAMP: within 30 min of ingestion and again after 4 h, prior to destruction of the macrophages. Ingestion of the heated bacteria and avirulent strain by nonimmune macrophages showed a similar rise at 30 min followed by a decrease to control levels by 4 h. In the case of immune macrophages a similar rise was seen with *S. typhimurium* 415, but the increase at 4 h was much less pronounced (1.5-fold) and was not followed by macrophage destruction. The exact role of endotoxin in these changes in cAMP remains to be elucidated, as well the relationship of these events to salmonella pathogenicity in general. Figures 1; references 11: 3 Russian, 8 Western.  
[141-12172]

ARABINOSE FERMENTATION BY PLAGUE BACILLUS STRAINS ISOLATED IN GORNY-ALTAY  
ENDEMIC FOCUS

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 10,  
Oct 83 pp 99-100

VERSHININA, T. I. and APARIN, G. P., Irkutsk

[Abstract] One of the characteristic features of the strains of plague bacilli isolated in the Gornyy-Altay autonomous oblast is the failure to ferment arabinose during the first 1-7 days of culture, in distinction to strains from other regions which do so. Arabinose positive (ara+) variants were obtained from the negative strains by culturing and subculturing them on Hiss's medium at 28°C for 21 days and testing for arabinose fermentation. Nine of the 14 strains tested yielded ara+ cells within 7-10 days which retained the ara+ trait for up to 20 months. In all other cultural and biochemical respects the ara- and ara+ cells were identical. The ara+ cells retained high virulence for white mice (LD<sub>50</sub> = 3 to 158 cells/mouse), and were avirulent for guinea pigs (LD<sub>50</sub> greater than 10<sup>9</sup> cells/guinea pig). Newcomb's test was performed to demonstrate that the ara+ trait was due to spontaneous mutation which occurred prior to the cells coming in contact with arabinose.  
[141-12172]

RELATIONSHIP BETWEEN PESTICINOGENICITY AND PHAGE RESISTANCE IN PLAGUE BACILLUS

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 10,  
Oct 83 pp 100-101

PAK, Yu. G., ANISKINA, G. P. and SATYBALDIYEV, N. A., Alma-Ata

[Abstract] A series of studies are reviewed with respect to pathogenicity, phage susceptibility, and production of pesticin 1, coagulase, and fibrinolysin by plague bacilli. It has been shown that bacteriophage-infected plague bacilli can dissociate on solid media into R and OR variants, whereby the R variants do not differ from typical cultures and the OR variants are resistant to the diagnostic Pokrovskaya and L-413"C" phages, but susceptible to the pseudotuberculosis phage. The R variants produce pesticin 1, fibrinolysin and coagulase, while the OR variant produces only pesticin 1. Studies on the role of the homologous phage in such variability have shown that acquisition of resistance to the homologous phage involves loss of the ability to produce fibrinolysin and coagulase; such variants are avirulent for laboratory and wild rodents and are inhibited by gentian violet. However, mutants resistant to the two diagnostic phages remain highly virulent and form foregut blockage in fleas. It appears that under natural conditions a symbiotic relationship may prevail among the plague bacilli and specific phages that may significantly alter the biological properties of the former.  
[141-12172]

ACTIVITIES OF 'PATHOGENICITY' ENZYMES AND PESTICIN-FIBRINOLYSIN-PLASMA  
COAGULASE SYSTEM COMPONENTS IN SUBCELLULAR FRACTIONS OF PLAGUE BACILLUS

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOLOGII in Russian No 10,  
Oct 83 pp 101-102

KUZ'MICHENKO, I. A., SHCHERBAKOV, A. A., KONDRASHIN, Yu. I. and BRANDZISHEVSKIY,  
Yu. V., Saratov

[Abstract] Studies were conducted on the fractionation of a vaccine strain (EB) of the plague bacillus to relate the various factors implicated in pathogenicity to subcellular components. The cells were disintegrated by treatment with lysozyme in the presence of EDTA, exposed to ultrasound, and centrifuged in a sucrose density gradient to obtain periplasmatic, cytoplasmic and membranous fractions. Although the enzymatic activities of interest were detected in all the fractions, peak phospholipase D activity was ascribed to the membranous fractions, peak phospholipase A<sub>2</sub> activity was found in the cell wall fraction, while most of neuraminidase activity was in the periplasmatic zone and the external membranes. The periplasmatic fraction and the external membrane fraction possessed the highest fibrinolytic activity, while plasma coagulase was associated with cytoplasmic membranes. Pesticin 1 was largely limited to the periplasmatic fraction and the cytoplasm. In addition, guinea pig erythrocytes were hemolyzed by the periplasmatic fraction. Thus, the biologically active components were found to be localized largely at the external layer of the cell wall, where their potential for interaction with host organism appears to be the greatest.

[141-12172]

PREPARATION OF BACILLUS ANTHRACIS PROTOPLASTS AND MEMBRANOUS STRUCTURES

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 10,  
Oct 83 p 104

IVANOVA, Ye. V., Irkutsk

[Abstract] Although Bacillus sp. are relatively refractory to the effects of lysozyme, protoplasts of B. anthracis STI-1 were prepared by the incubation of a suspension of B. anthracis in 0.05 M tris-buffer, pH 8.0, with lysozyme (2 mg/ml) and EDTA (5 mg/ml) at 37°C for 5 h. The metabolic activity of the protoplasts was depressed, as indicated by the low oxygen consumption after 5 h of incubation (2.8 mcM/min vs. 14.5 mcM/min of control bacillary forms). Membranous structures were isolated by differential centrifugation of the protoplast preparation after 5 h of incubation-, two washings of the protoplast fraction with sucrose-physiologic saline, resuspension of the sediment in distilled water and incubation at 37°C for 40 min, followed by incubation at 40°C for 24 h. After two such operations electron microscopy revealed spherical shadows of protoplast membranes and folded surface membranes.

[141-12172]

#### GROWTH FACTOR REQUIREMENTS OF TULAREMIA BACILLI

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 10, Oct 83 p 106

KAYUPOVA, M. Kh. and STEPANOV, V. M., Alma-Ata

[Abstract] Holarctic, nonarctic, and Central Asian races of the tularemia bacillus were studied for growth-factor requirements on various synthetic media supplemented with Traub's amino acid mixture. The nonarctic microorganisms generally required the addition only of vitamin B1, while the holarctic bacilli needed both vitamin B1 and calcium pantothenate. The Central Asian varieties were found to be the most demanding, requiring the addition of vitamins B1 and B12, calcium pantothenate, and nicotinamide. These investigations demonstrated the feasibility of culturing the tularemia agent on synthetic media supplemented with the appropriate nutritional factors. [141=12172]

UDC 581.188.12

#### PHOTOSENSORY TRANSDUCTION IN EUGLENA GRACILIS

Kiev DOKLADY AKADEMII NAUK UKRAINSKOY SSR Seriya B Geologicheskiye, khimicheskiye i biologicheskiye nauki in Russian No 9, Sep 83 (manuscript received 8 Apr 83) pp 77-80

POSUDIN, Yu. I., Ukrainian Academy of Agriculture (Presented by Academician UkSSR Academy of Sciences S. M. Gershenzon)

[Abstract] An explanation is given of the role of biological membranes in photosensory conversion of energy of an external light signal into energy of movement in the unicellular microorganism *Euglena gracilis*. *Euglena gracilis* is described and possible mechanism involved in sensory transduction by *Euglena gracilis* discussed briefly. An electroconstrictive model of photosensory transduction by *E. gracilis* is described and discussed. A diagram of transduction of light energy into energy of photomovement in *E. gracilis* is presented and discussed. It is assumed that light does not directly regulate permeability of  $\text{Ca}^{2+}$  through the flagellar photoreceptor membrane but that the change of photobehavior of *E. gracilis* is induced by monovalent and bivalent cations, the flow of which is controlled by the light-activated  $\text{Na}^{+}\text{-K}^{+}$ -pump. It was found that change of concentration of  $\text{Ca}^{2+}$  ions in the circumflagellar space and the electroconstriction associated with it may affect the photobehavior of *E. gracilis*. Figure 1; references 11: 2 Russian, 9 Western. [057-2791]



UDC 615.918:582.28].015.4:616-008.931

EFFECTS OF T-2 TOXIN ON ORGANELLE-SPECIFIC ENZYMES IN RAT TISSUES

Moscow VOPROSY MEDITSINSKOY KHIMII in Russian No 4, Jul-Aug 83  
(manuscript received 30 Aug 82) pp 113-117

KRAVCHENKO, L. V., AVREN'YEVA, L. I. and TUTEL'YAN, V. A., Enzymology  
Laboratory, Institute of Nutrition, USSR Academy of Medical Sciences, Moscow

[Abstract] Studies were conducted on the effects of mycotoxin T-2 derived from *Fusarium* sp. on organelle-specific enzyme changes in Wistar rats. Intra-gastric administration of T-2 (3.8 mg/kg = 1 LD<sub>50</sub> dose) resulted in death of 40% of the animals within 72 h; in addition, weight of thymus showed a greater than two-fold decrease, while that of the liver was increased and the weight of the spleen decreased to a more moderate extent. Most of the hepatic enzymes showed a decrease in activity within 24 h by 40-60% which persisted for the 72 h period of observation; however, microsomal glucose-6-phosphatase in the liver remained essential normal. Activity of splenic lysosomal hydrolases (beta-glucosidase, arylsulfatase A and B) rose sharply within 3 h (170-210%; acid RNase activity increased by only 16%), and thereafter their activities declined but remained above normal; splenic mitochondrial succinate dehydrogenase increased by 42% after 1 h and then declined to above normal levels, while glucose-6-phosphatase remained unaffected. All of the thymus enzymes showed a sharp increase by 72 h (by 170-296%) concomitantly with thymus involution. It appears, therefore, that the pattern of marked enhancement of lysosomal enzymatic activities can be implicated in the rapid involution of the thymus, and that the immunosuppressive effects of T-2 are due to thymus involution. Figures 2; references 19: 7 Russian, 12 Western.  
[128-12172]

## IN VIVO AND IN VITRO TOXIN TESTING. PART 1. NEW IN VITRO METHOD

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 9, Sep 83 (manuscript received 8 Feb 83) pp 33-36

BASNAK'YAN, I. A., SEVERTSOVA, M. K., STANISLAVSKIY, Ye. S., MASHILOVA, G. M., ARTEM'YEVA, T. A., IL'NITSKAYA, I. I. and SAUKOVA, N. P., Central Scientific Research Institute of Vaccines and Sera imeni I. I. Mechnikov, Moscow

[Abstract] An in vitro method was designed for determinations of bacterial toxins in culture fluids which has a high degree of correlation with in vivo tests. The method relies on growth inhibition of a test culture of *E. coli* 12 200 PS by the toxins, in a system in which a series of test tubes contains a decreasing concentration (volume) of the toxin (culture fluid) and an increasing concentration of the *E. coli* suspension. Following mixing, the test tubes are incubated for 6-18 h at 37°C and the optical density of the suspension is determined spectrophotometrically. The toxin concentration giving 50% growth inhibition is graphically determined, and such figures--expressed in 50% inhibition units/ml--have been found to give good agreement with D<sub>50</sub>/ml and LD<sub>50</sub>/ml values obtained with animal studies in the case of *Corynebacterium diphtheriae* PW8, *Pseudomonas aeruginosa* PA 103, and *Clostridium perfringens* A, B and D toxins. Figures 2; references 5 (Russian).  
[124-12172]

UDC 577.322:577.352.46:595.44:114.5

## CHANNEL-FORMING PROPERTIES OF PRESYNAPTIC NEUROTOXIN OF LATRODECTUS TREDECIMGUTTATUS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 272, No 5, Oct 83 (manuscript received 4 Apr 83) pp 1250-1251

SADYKOV, A. S., academician, SALIKHOV, Sh. I., KRASIL'NIKOV, O. V., TERNOVSKIY, V. I. and TASHMUKHAMEDOV, B. A., Institute of Bioorganic Chemistry, Uzbek SSR Academy of Sciences, Tashkent

[Abstract] The component of *Latrodectus tredecimguttatus* spider venom possessing channel-forming properties on bilayer lipid membranes has been isolated and identified as a presynaptic protein neurotoxin showing maximum activity in the dimer and tetramer state. On contact with membrane surface the toxin undergoes aggregation on the membrane surface and leads to the formation of ion channels selective for cations ( $K^+ > Ca^{2+} > Sr^{2+} > Mg^{2+} > Na^+ > Li^{2+}$ ). As the pH increases from 5.0 to 7.0 the activity of the toxin increases tenfold, since the latter environment favors the dimeric and tetrameric forms. For physiological activity it can be assumed that the toxin has to bind to specific receptors on the presynaptic membranes. Figures 2; references 10: 4 Russian, 6 Western.  
[044-12172]

PUBLIC HEALTH

UDC 362.1(470.57-22)

ADMINISTRATIVE ASPECTS AND ROLE OF REPUBLIC HOSPITALS IN IMPROVING RURAL MEDICAL CARE

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 10, Oct 83  
(manuscript received 1 Feb 83) pp 3-7

PETROV, M. Ye., doctor of medical sciences, Bashkir Republic Clinical Hospital imeni G. G. Kuvatov

[Abstract] The rural health delivery system in Bashkiria is reviewed from administrative and planning viewpoints, with emphasis on the role of the central republic hospital in such systems- The Bashkir Order of the Red Banner of Labor Republic Clinical Hospital imeni G. G. Kuvatov is a 1120-bed institution that functions both as a general hospital and administrative center for the entire republic. At the present time Bashkiria has 11 hospitals and out-patient clinics with eleven thousand beds and many specialized wards and services. Recent improvements in medical services have included elimination of small and inefficient city hospitals and the establishment of many specialized services at existing hospitals and clinics. The 11th Five-Year Plan will see the opening of 15 additional interrayon medical departments with a total of 600 beds. Other measures include improvements in ambulatory services, expansion of medical emergency teams, greater emphasis on postgraduate medical education for rural physicians, and further improvements in the rural health services and facilities.

[132-12172]

UDC 614.2(470):008

BASIC INDICES OF PROGRESS IN PUBLIC HEALTH IN RSFSR

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 10, Oct 83  
(manuscript received 12 May 83) pp 36-39

IVAKINA, V. N., candidate of medical sciences, RSFSR Ministry of Health, Moscow

[Abstract] Statistical data are reviewed as indicators of the current state of public health in the RSFSR. The progress that has been made in the delivery

of health care is indicated by such facts as the increase in the number of hospital beds in the RSFSR from 1469.3 thousand ten years ago to 1802.9 thousand at the present time, corresponding to 122.5 and 129.5 beds per 10,000 population; by the beginning of 1983 the latter figure had improved to 132.6. The decrease in the total number of medical facilities from 5094 to 4658 in that time merely indicated reorganization and liquidation of small uchastok hospitals and clinics. Other indicators of improved medical services are the increase in the number of physicians per 10,000 population from 34.8 in 1975 to 42.6 in 1982, and a corresponding increase in paramedical personnel from 105.2 to 117.3, respectively. However, the availability of physicians in the urban areas on a per patient basis is greater than in rural areas, a situation which is regarded as unsatisfactory. On the whole, however, the statistical findings show that considerable progress continued to be made in meeting the health needs of the population in the RSFSR/  
[132-12172]

UDC 362.11:313.1

#### STATISTICS ON BED CAPACITY OF OBLAST, KRAY AND REPUBLIC (ASSR) HOSPITALS IN RSFSR

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 10, Oct 83  
(manuscript received 23 Dec 82) pp 39-42

SKVIRSKAYA, G. P., RSFSR Ministry of Health, Moscow

[Abstract] Hospital bed statistics in the RSFSR at the oblast, kray and republic (autonomous republic level) levels are analyzed as an indicator of progress in health services and as an aid in planning new hospital facilities. At the present, there 69 such facilities in the Federation which employ 14,500 physicians, while the hospital bed capacity has increased from 47,000 in 1970 to 64,000 in 1981. Fifteen large general hospitals are currently under construction with a capacity of 1000 beds per facility. The average number of beds per hospital has increased from 682 in 1970 to 929 in 1981. Nevertheless, it must be admitted that not infrequently planning for hospitals and their capacities are inadequate and inappropriate to the region in question, and that this is especially true of the rural areas. In 1981 there were 1,072,678 inpatients at the various facilities, of whom 38% came from rural communities. Efforts are also being made to staff the various facilities with highly qualified professionals and to provide better out-reach services.  
[132-12172]

DEVELOPMENT OF PUBLIC HEALTH FACILITIES IN RURAL RAYONS

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 10, Oct 83  
(manuscript received 24 Feb 82) pp 6-10

MALOV, N. I. and CHURAKOV, V. I., USSR State Plan, Moscow

[Abstract] Plans for improving the public health services network in the rural areas of the USSR are discussed in the light of the May Plenum (1982) of the CC CPSU. Current analysis of hospital visits and hospitalization records show that individuals from rural areas account for 25.3% of the admissions of urban hospitals because of lack of, or inadequate, local facilities. In order to improve this situation an expansion is planned of existing rural health facilities and establishment of new clinics and hospitals. Plans have also been made to increase the number of rural physicians by assigning 16,000-17,000 new medical institute graduates per year to rural health services, beginning with 1983. Revisions are also being made in the organization and administration of medical emergency teams to provide the rural areas with greater coverage.  
[135-12172]

BASIC TRENDS IN DEVELOPMENT OF OB-GYN SERVICES IN RURAL COMMUNITIES

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 10, Oct 83  
(manuscript received 21 Mar 83) pp 15-18

KUZNETSOVA, L. S., All-Union Scientific Research Institute of Social Hygiene and Public Health Organization imeni N. A. Semashko, USSR Ministry of Health, Moscow

[Abstract] An outline is presented of concrete means and plans for future improvements in the OB-GYN services in rural areas of the Soviet Union. The fundamental measures include improvements in the professional capabilities of the medical personnel, the creation of well-staffed and equipped OB-GYN wards and clinics, efficient ambulance services, and out-patient clinics in accessible areas. These changes have been particularly noticeable at the oblast and rayon health centers, where the available services have been designed to meet patient needs. Inter-rayon OB-GYN wards should have a capacity of 80-90 beds to diminish the differences in the quality of medical care available in cities and in rural communities, attract patients, and further alter the role of feldshers and midwives from providing primary care to sanitary and educational work. The development of a rural network of hospitals and clinics must be complemented by a parallel development of effective ambulance services.  
[135-12172]

EFFECTIVENESS OF REHABILITATION AT CENTRAL RAYON HOSPITALS

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 10, Oct 83  
(manuscript received 15 Feb 83) pp 18-22

KILIVNIK, V. S., Department of Management, Vinnitsa Oblast Clinical Hospital  
imeni N. I. Pirogov; Nemirov Central Rayon Hospital, Vinnitsa Oblast

[Abstract] A comparison was made of the outcome of rehabilitation of 688 patients at the Nemirov Central Rayon Hospital and a cohort treated for similar conditions by strictly traditional means in the Tul'chyn Rayon. The results showed that active rehabilitation measures of patients with a variety of conditions decreased patient visits to the hospital 4.7-fold, loss of work time two-fold, and hospitalization 1.6-fold, in comparison with patients managed on a strictly clinical basis. Improvements were least impressive in the case of agricultural workers, but were directly correlated with income (on a per family member basis).  
[135-12172]

UDC 618.3-06:616.155.194.8]-07-08

DIAGNOSIS AND THERAPY OF IRON DEFICIENCY ANEMIA IN PREGNANT WOMEN

Kishinev ZDRAVOOKHRANENIYA in Russian No 2, Mar-Apr 83 (manuscript received 26 Oct 82) pp 49-51

PALLADI, G. A. and MUSTYATSE, A. V., Chair of Obstetrics and Gynecology,  
Therapeutics Faculty, Kishinev Medical Institute

[Abstract] A study conducted over the period 1971-1981 revealed that in a given year 12-22% of pregnant women suffer from iron deficiency anemia. Therapeutic trials with 102 patients in this category showed that positive effects can be obtained in 63.6 to 91.6% of the cases, depending on severity, by a regimen combining diet therapy with drug treatment and/or transfusions. One of the three iron preparations most extensively used in the USSR (ferbitol, ferrum-Lek, ektofer) is administered for 6-8 weeks while the patient is on a 3000-3500 kcal/day diet containing adequate quantities of meat (up to 120 g), with limited fats (up to 70 g) and carbohydrates (350-400 g). Hematopoiesis-stimulating vitamins (vitamin B12, folic acid) and ascorbic acid are also prescribed and, when necessary, erythrocyte transfusions (125-150 g at 3-5 day intervals). Such an approach has been found effective in eliminating or minimizing intra- and postpartum complications and in promoting neonatal health.  
[066-12172]

## RATIONAL NUTRITION AS A KEY FACTOR IN DECREASING INFANT MORBIDITY

Alma Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 3, Mar 83 pp 17-20

MASHKEYEV, A. K., ADAMOVICH, S. L. and GAGARINA, S. A., Institute of Pediatrics, Kazakh SSR Ministry of Health

[Abstract] A key factor in lowering infant morbidity and mortality is appropriate nutrition, such as breast feeding. None of the products commercially available meet the nutritive values of human milk, although from the chemical viewpoint they appear to be entirely satisfactory. A recent analysis of infant mortality figures has shown that 61.7% of neonates succumbing to intestinal infections were taken off breast feeding by the third month of life. In view of this, the Kazakh Branch of the Institute of Nutrition of the USSR Academy of Medical Sciences has developed new dairy products, Baldyrgan and Balbobek, that are enriched in the essential factors necessary for infant well-being. These products are produced by fermentation processes and incorporate egg protein hydrolysates and yolk emulsion. Extensive testing under clinically controlled conditions has shown these products to be effective nutrients used alone and as supplements to breast feeding. References 8 (Russian). [067-12172]

## PREMATURE BIRTH IN PATHOGENESIS OF OBSTETRIC HEMORRHAGE

Ashkhabad ZDRAVOOKHRANENIYE TURKMENISTANA in Russian No 3, Mar 83 pp 3-6

BAZHENOVA, K. M., PAL'VONOVA, B. B., LAZEYEVA, L. V. and ABRAMOVA, I. I., Scientific Research Institute for Protection of the Health of Mothers and Children (director-Professor V. N. Bondarev), Ministry of Health, Turkmenian Turkmen SSR

[Abstract] The authors observed 241 women who had suffered pathologic hemorrhage in childbirth with other obstetric pathology. Observations indicated that premature birth occurred in three fourths of cases in which placental hemorrhage was observed. There was no significant correlation between obstetric hemorrhage and the number of children previously born, but hemorrhage was more likely to occur, the earlier the pregnancy was interrupted. Previous works have reported a relationship between excessive fetal size and hemorrhage. The authors of the present work report that when the fetus is small, processes leading to early termination of pregnancy occupy a definite position in the pathogenesis of obstetric hemorrhage. The greatest blood loss occurred in the group of women with birthweights of 1000-2000 g. Repeated experimental studies and clinical observations have proven the possibility of regulating uterine and placental circulation and restorative processes by the use of medications. 17-Hydroxyprogesterone capronate may be given beginning in the first trimester and continuing through the 34th-38th week of pregnancy as a protective medication, estrogen synergist, stimulating uterine growth and helping to prevent

premature birth. Allyl estrinal has the same progestative effect on the endometrium. Turinal which contains it is given three times per day at 5-30 mg, and also has placental activity. The effectiveness of the preparations can be monitored by determining the excretion of estriol and pregnandiol with the urine. Vitamin E is a preventive and therapeutic medication for fetal development disorders, potentiating the effects of progesterone and protecting the placenta from "aging," while its effect on the contractile activity of the uterus is similar to that of progesterone. References 8 (Russian).  
[068-6508]

#### CONDITION OF NEONATES WITH MOTHERS IN RISK GROUP FOR DEVELOPMENT OF INTRAUTERINE BACTERIAL INFECTION

Ashkhabad ZDRAVOOKHRANENIYE TURMENISTANA in Russian No 3, Mar 83 pp 6-10

MITROFANOVA, G. P., KHANAMOVA, T. A., TAGIYEVA, Yu. A. and BORISENKO, T. S. Department of Neonatology (chief-Professor V. V. Gavryushov), Central Order of Lenin Institute for Advanced Training of Physicians; Turkmen Scientific Research Institute for Protection of the Health of Mothers and Children (director-Professor V. N. Bondarev), Ministry of Health, Turkmen SSR; Republic Clinical Hospital imeni Pirogov, (chief physician - Ch. N. Nazarov)

[Abstract] Study is presented of the condition of neonates born of mothers in a high risk group for development of intrauterine bacterial infection. One-hundred-seventy-seven children (including 4 twins) of 173 mothers divided into four groups were observed. The groups were: 1) control group; 2) healthy persons with complications of childbirth; 3) persons with inflammatory disease with normal birth and 4) persons with inflammatory disease and complicated birth. It was found that the group at highest risk for development of intrauterine bacterial infection was group 4 with location of inflammatory focus along the birth canal. Observation of the children at the maternity hospital and examination of 99 at a later time allowed the general morbidity and mortality to be established. Intrauterine bacterial infections were diagnosed in 23 neonates (including 8 of the 22 premature infants). The course of the infections was severe in 65.2% of cases: sepsis, pneumonia, meningo-encephalitis. The control group had no intrauterine bacterial disease, groups 2 and 3 had 8 cases, including pneumonia and sepsis in 3 and one fatal outcome. The symptoms of intrauterine bacterial infection were observed in most neonates within the first day of life. Microbiological studies of 163 neonates and their mothers were performed to confirm the intrauterine nature of the disease. Both gram negative and gram positive flora were cultivated. The pathogens of the diseases in neonates included: in 14 children--E. coli, in 5 in combination with nonpathogenic staphylococcus, in one--with cyanophyta, in 5--St. aureus, in 3--other flora. The analysis of the condition of neonates confirmed that the high risk group for development of intrauterine disease, is the group of mothers with inflammatory disease of the birth canal and complications of birth. 34.1% of the children of such mothers had intrauterine bacterial infections. References 9 (Russian).  
[068-6508]



CHILD HEALTH MODELS AS CRITERIA OF HYGIENIC STANDARDIZATION OF PHYSICAL TRAINING  
IN PREPARATORY CLASSES AT SCHOOL

Moscow GIGIYENA I SANITARIYA in Russian No 10, Oct 83 (manuscript received  
10 Mar 83) pp 66-70

LEBEDEVA, N. T., Minsk Medical Institute

[Abstract] A set of 27 indicators covering mental and physical development were used to establish model criteria for child development at the preparatory-class level and used as criteria for evaluating the progress of "non-model" children in the course of a year. The children were divided into two age groups--i) from 6 years to 6 years, 5 months and 29 days, and ii) 6 years, 6 months and older--since significant developmental differences separate these two age groups. In addition, separate model criteria applied to boys and girls. On the basis of these criteria significant differences were evident in the health status of the 'model' and 'non-model' children, and it appears that such 'model' criteria should be incorporated into standard hygienic practices of assessing pediatric health. Among the model and non-model boys the differences tended to diminish toward the end of the school year, while among girls the differences persisted. It appears that establishing model criteria for mental and physical development at the preparatory-class level can provide important information for assessing child health, and serve as a useful adjunct to the more common data based strictly on statistical averages. References 10 (Russian).  
[130-12172]

UDC 619:616-006.446:636.22/.28

HORIZONTAL TRANSITION PATH OF ONCORNAVIRUS INFECTION

Moscow VETERINARIYA in Russian No 8, Aug 83 pp 33-36

NAKHMANSO, V. M., DUN, Ye. A. and BURBA, L. G., All-Union Institute of Experimental Veterinary Medicine

[Abstract] It has been experimentally proven that subcutaneous administration of 2500 lymphocytes of the blood of an animal infected with a cattle leucosis virus--the number of lymphocytes contained in approximately 0.0005 ml of whole blood--will cause infection of cattle with the virus. This article studies the significance of various horizontal virus transition factors in the epizootic process of oncornavirus infection caused by this virus. Studies of calves raised on unpasteurized herd milk indicate that intrauterine infection of calves is more significant than transmission through milk in the horizontal spread of the disease. Natural mating facilitates spreading of the infection from bulls to cows. Calving in common barns was not found to be a significant cause of transmission of the infection from cow to cow. The results in general indicate that the virus is not highly aggressive and has a low horizontal transmission index. There is also an apparent genetic component in infection, since 85% of cows in an infected herd for 2.5 years do not become infected. The study did not reveal which path of post-natal transition is dominant in horizontal transmission of the infection.  
[069-6508]

UDC 619:616.988.73-03:636.521.58

COURSE OF NEWCASTLE DISEASE AT POULTRY FARM

Moscow VETERINARIYA in Russian No 8, Aug 83 pp 36-38

TERYUKHANOV, A. B., All-Union Scientific Research Veterinary Institute of Poultry Raising

[Abstract] The course of Newcastle disease at a poultry farm is described. First a nonimmune or slightly immune bird becomes ill, then dies. Passing of the pathogen through the first cases increases its concentration in the

environment. Insufficiently immune birds catch the disease but survive, significantly increasing the antihemagglutinin titer. The farm then becomes a source of propagation of the pathogen, but if sanitary conditions and nutrition are good at the farm the birds may seem healthy. However, if a stress situation arises later, such as poor or insufficient feeding, heat or cold, food toxicity, etc., the disease seems suddenly to break out again with significant losses. Serologic studies, with 20 to 25 blood samples taken from each house, are important in evaluating the epizootic status of a farm for Newcastle disease. The age of the birds, time since vaccination, vaccination method and characteristics of the vaccine must be considered in the evaluation. A high antibody titer two to three months or more after vaccination indicates circulation of the virulent virus in the farm, in spite of the absence of clinical symptoms. This requires emergency measures for prevention of further accumulation of the virus at the farm. Measures include general sanitation of the farm and live or inactivated virus vaccination of birds. [069-6508]

UDC 619.616:921.5.022.6:636.4

#### RESPIRATORY INFECTION OF SUCKLING PIGLETS

Moscow VETERINARIYA in Russian No 8, Aug 83 pp 38

MAKAROV, Yu. A., RUBTSOVA, I. N. and ANTONOVICH, L. S., Semipalatinsk Zooveterinary Institute, and GLUKHOV, M. I., Scientific Research Veterinary Institute, Kazakh SSR

[Abstract] Data are presented from studies performed at a large swine breeding farm. During the course of the year, the disease was recorded in three areas in animals up to 18 days of age. Symptoms included fever, reduced appetite, cough and sometimes diarrhea. Post-mortem examination revealed inflammation of the mucous lining of the nasal cavity and other parts of the respiratory tract. Influenza type A virus was cultivated from nasopharyngeal smears and lung tissue. Antiserum to human influenza virus was used to identify the hemagglutinating agent. Antibiotic, sulfanilamide, calcium chloride, urotropin and quarantine were used to isolate the pathogen and prevent secondary microflora complications. [069-6508]

## EXPERIMENTAL SARCOCYSTOSIS IN LAMBS

Moscow VETERINARIYA in Russian No 8, Aug 83 pp 39-41

PRUS, M. P., SAKHNO, V. M., YAROVAN, N. I. and RAKHIMOV, A. T. (Scientific Supervisors V. P. Shishkov, N. I. Stepanova, A. G. Malakhov) All-Union Institute of Experimental Veterinary Medicine, Moscow Veterinary Academy

[Abstract] The course of experimental sarcocystosis in lambs during the disease and the symptom complex of the experimental infection with *S. ovis* sporocysts is described. Experiments are performed to determine the possibility of infecting animals with the blood of donors with sarcocystosis, as well as the possibility of contact infection when animals are penned together. Pathologic-anatomic changes are noted, the development of the immune response is traced and biochemical blood serum and tissue enzyme activity characteristics during the acute disease are studied. Twenty-four lambs 4 to 5 months of age were used in the study, in 6 groups exposed to varying numbers of sporocysts (4 groups), while two groups were not infected but were penned together with infected animals, and the control group was neither infected nor penned with infected animals. On the 24th day, animals from one of the noninfected groups received blood from animals in the infected group. Clinical symptoms of infection were observed in animals infected by eating muscle tissue containing these sporocysts, as well as animals receiving blood from infected animals and animals penned in contact with infected animals. The clinical manifestations and immune response depended on the dose of the pathogen received. Symptoms included emaciation, anemia, fever, reduced appetite, nervous phenomena and nasal discharge. An increase in immunoglobulins was observed during the acute phase. Pathologic-anatomic changes included hemorrhagic diathesis, liver dystrophy, myocardial atrophy, jaundice of subcutaneous tissue and serous linings and congestive phenomena. The activity of tissue and serum enzymes changes during the course of the disease. The increase in residual nitrogen in the blood serum and decrease in total protein are greatest during the acute period.

[069-6508]

UDC 619:576.809.33:576.858

## CULTURING DUCK PLAGUE VIRUS

Moscow VETERINARIYA in Russian No 9, Sep 83 pp 31-32

KUROCHKA, M. V., SERGEYEV, V. A., ZHESTEREV, V. I., MISHCHANIN, V. A., ANAN'YEVA-RYASHCHENKO, N. P., All-Union Scientific Research Institute of Veterinary Virology and Microbiology

[Abstract] Results are presented from cultivating an attenuated strain of duck plague virus adapted to chick embryo cells. A primary monolayer chick embryo cell culture, subculture and suspension of freshly isolated cells were

used, the latter produced by trypsinization of 9 to 10 day chick embryos, which were then resuspended in a medium consisting of 0.25% enzymatic muscle-protein hydrolyzate in a saline solution containing 5 to 7% ox serum. Stationary chick embryo cell cultures were infested at the moment of formation of the monolayer, the suspension cells were infested simultaneously with introduction of the cell suspension to the flask. Viral accumulation was determined by titration of the primary monolayer chick embryo cell culture to determine cytopathic action. In order to grow the virus in a stationary cell culture, 200-250 mℓ of cell suspension was introduced to a 1.5 liter separating flask and held at 37°C for 24 to 48 hours. Media with pH 7.0 to 7.9 were used to determine the influence of pH. It was found that the addition of serum to the supporting media helped to increase virus titer slightly. In all cases the maximum accumulation of virus occurred on the 3rd day of cultivation. The presence of serum in the beginning facilitated accumulation of virus in the suspension containing both a minimum and maximum concentration of cells, apparently a result of better survival of cells in the suspension. Accumulation of virus in suspensions of chick and of duck embryo cells was practically identical. In both cases the maximum viral activity was noted on the third day of cultivation, after which it gradually decreased.  
[070-6508]

UDC 619:616.988.51-091:635.52/58

#### PATHOMORPHOLOGY OF THE UROGENITAL ORGANS IN INFECTIOUS BRONCHITIS OF CHICKENS

Moscow VETERINARIYA in Russian No 9, Sep 83 pp 35-38

IBRAGIMOV, A. A., All-Union Agricultural Correspondence Institute and  
RAMAKHOVA, M. A., All-Union Institute of Experimental Veterinary Science

[Abstract] Thirty-three day old chicks and 10 laying hens were infected with infectious bronchitis virus by intranasal and intraconjunctival administration of extraembryonal fluid containing an epizootic strain of the Massachusetts sero-type at 0.2 mℓ for the chicks and 0.4 mℓ for the chickens. The hens were re-infected the next day. Control birds received intact extraembryonal fluid with no virus. Three chicks were killed after 1, 3, 12 and 26 days, the remainder 212 days after infection. Four chicks died during the experiment. Infected laying hens were sacrificed on the 5th, 10th and 25th day after infection. Photomicrographs of oviduct and kidney preparations are presented, as well as gross photographs of an oviduct cyst and the ovaries and oviducts of a "false" layer. No macroscopic changes in reproductive organs were observed in the chicks killed one week after infection. At 3 weeks after infection the oviduct mucosa were swollen and reddened. In the chickens killed 12 weeks after infection, the oviduct and ovaries were underdeveloped. One had obliteration of the lumen of the oviduct, another a pea-sized cyst. Many glands were cystous and swollen or atrophied and obliterated. Histologic study of underdeveloped oviducts reveals replacement of lymphoid cells with fibroblastic cells, leading to atrophy of the mucous lining and formation of scarred sections. Histologic examination of the ovaries of the laying hens sacrificed during the experiment revealed hyperemia, edema, moderate pseudo-eosinophilic infiltration of the stroma and atresia of the follicles. The

oviduct revealed hyperemia, pseudo-eosinophilic infiltration, dystrophy and desquamation of the epithelium of the mucosa. After 10 days the ovaries and oviducts were inactive. In two of the four birds killed on the 25th day the ovaries were active, the oviduct underdeveloped. Macroscopic changes were observed in the kidneys of birds sacrificed after the 8th day following viral inoculation. Histologic changes in the kidneys were observed in all cases when macroscopic changes were absent. The severity of the uremic syndrome in infectious bronchitis has previously been reported to depend on the quality of diet, quantity of animal protein and temperature, though these factors cannot alone cause uremic syndrome. Figures 5.

[070-6508]

## CONFERENCES

### PROTECTION OF HEALTH OF WOMEN

Kishinev SOVETSKAYA MOLDAVIYA in Russian 15 Oct 83 p 2

[Unsigned article]

[Text] The 14th All-Union Congress of Medical Workers in the Service of Motherhood and Childhood, which concluded on the 14th of October in Kishinev was devoted to the problems of that service.

The plenary and sectional meetings of the congress heard reports and communications on all the problems of medical protection of motherhood and childhood. Along with Soviet scientists and practicing physicians, specialists from Bulgaria, GDR, Hungary, Vietnam, Poland, Rumania, CzechSSR, Yugoslavia, India and Finland participated. An exchange of experimental achievements in obstetrics and gynecology took place. Recommendations were worked out for the future improvement of this service and the annual prophylactic dispensarization of the population.

A new Administration of the All-Union Scientific Society of Obstetricians-Gynecologists was elected at the forum. Its chairman, once again is Corresponding Member, USSR Academy of Medical Sciences, G. M. Savel'yeva.

For outstanding services in the development of medical science and public health, a group of Soviet and foreign scientists were presented diplomas of honorary members of the society.

Participants of the congress became acquainted with the achievements of Moldavia in the field of protection of the health of women and children. They visited rural medical dispensaries in Kalarashskiy and Strashenskiy rayons, the central rayon hospital in Resina and the republic center for protection of health of mothers and children.

Chairman of the organizing committee of the forum, Deputy USSR Minister of Health Ye. Ch. Novikova, commenting on its results said "By its genuine humanism the Soviet system of protecting the health of women and the younger generation has gained prestige in all the world, in our country, concern about an infant begins long before its birth. This is secured by scientifically-based methods of prophylactic dispensary observation of future mothers, beginning with their childhood years, that permits us not only to treat but also to prevent illness even at the so-called stage of risk.

The prophylactic direction is a very important aspect of this service, in the network of which are more than 10 thousand specialized consultation offices including medical-genetic, centers for protection of motherhood and childhood, sanatoria and rest homes. This work raises to a new qualitative level the utilization of modern treatment-diagnostic apparatus. Application, in particular, of electronics has opened the possibility to take under control the development of future infants at the most early stage.

Strengthening the health of women is served also by the course being realized in the USSR on showing them specialized medical aid at their residence and at work. The state program of health protection provides for investigation of the work conditions of women workers and the influence on their body of particular climate zones. Measures are being applied for the maximum drawing together of the levels of medical care of women in cities and in villages.

In the work of the congress took part the responsible worker of the CPSU Central Committee, M. I. Trubitsyn; Deputy Chairman of the MoSSR Council of Ministers, N. P. Kiriyak and Chief of the Sciences and Education Institutions Department of the Central Committee CPMo, M. S. Platon.

12321

CSO: 1840/096



## BRIEFS

LASER CONFERENCE--On 20 October in Dushanbe in the conference hall of the Academy of Sciences of the republic, the All-Union Conference on Semiconducting Lasers opened, organized by the academies of sciences of the USSR and TaSSR, the Institute of Physics imeni P. N. Lebedev USSR Academy of Sciences and the Physical Technical Institute imeni S. U. Umarov of the Academy of Sciences of the republic. Leading scientists from Moscow, Leningrad, Kiev, Minsk, Novosibirsk and representatives of scientific centers of many union republics took part in its work. The conference was opened by the introductory words of the chairman of its organizing committee, Corresponding Member USSR AS and President of the TaSSR AS, M. S. Asimov. Semiconducting lasers at present occupy an important place among other types of lasers being applied in various branches of the country's national economy. Tadzhik scientists also contribute their bit to the development of electronic engineering. The Physical Technical Institute imeni S. U. Umarov, together with the largest scientific centers and branch institutes of the country's industry, participate in the work for realization of the All-Union Complex Program for Semiconducting Lasers. By the initiative and with the active support of the creator of the world's first semiconducting laser, Nobel Prize and Lenin Prize winner, twice Hero of Socialist Labor, Academician N. G. Basov, the Laboratory of Quantum Electronics was organized in the institute. Before the participants of the conference appeared prominent scientists in the field of quantum electronics, winner of the Lenin Prize and USSR State Prize, Yu. M. Popov; winner of the Lenin Prize, A. P. Shotov; Professor P. G. Yeliseyev; winner of the Lenin Prize, Professor V. I. Shveykin; winner of the USSR State Prize, Professor M. F. Stel'makh; winner of the Lenin Prize and USSR State Prize, M. G. Mil'vidskiy; and others, who have rendered a huge contribution to resolution of the problem of industrial production and utilization of semiconducting lasers. [Text] [Dushanbe KOMMUNIST TADZHIKISTANA in Russian 21 Oct 83 p 2] 12321

ENZYMES AND PUBLIC HEALTH--The possibilities of applying enzymes and their use in medicine and the national economy was the theme of the 4th All-Union Symposium on Medical Enzymology, concluded in Alma Ata. Many illnesses directly or indirectly are connected with disruption of metabolic processes. Their timely diagnosis, knowledge of the nature of disruptions in metabolism--is an important task which enzymology has assumed. The data obtained aids in composing prophylactic diets in dining rooms of factories and plants and in correctly regulating child nutrition. For example, the new sour milk products, rich in enzymes, for children, "Baldyrgan" and "Balbobek" created at the

Kazakh affiliate of the Institute of Nutrition, USSR Academy of Medical Sciences have definite significance. Successes of enzymology have facilitated improving the methods of prevention, diagnosis and treatment of a number of illnesses. Problems facing this branch of medical science found reflection in the reports of the Vice President USSR AMS, S. S. Debov, academicians of the USSR AMS, V. M. Zhdanov and T. Sh. Sharmanov, Corresponding Member SSF AMS, I. B. Zbarskiy, Corresponding Member USSR AMS, B. F. Korovkin and others. They directed physicians to fundamental developments having applied significance for the progress of medicine and the national economy and for the fulfillment of the USSR Food Program. [Text] [Alma Ata KAZAKHSTANSKAYA PRAVDA in Russian 6 Oct 83 p 3] 12321

CSO: 1840/096

MISCELLANEOUS

UDC 621.314/632

ALGORITHMS FOR INTRICATE DESIGN OF SEMICONDUCTOR CONVERTERS FOR ELECTROFISHING INDUSTRY

Kiev TEKHNIЧЕСКАЯ ELEKTRODINAMIKA in Russian No 5, Sep-Oct 83  
(manuscript received 24 May 82) pp 56-61

PALSHMITAS, V.-A. A., Polytechnic Institute, Klaypeda

[Abstract] Generally speaking, best results in controlling fish movement in freshwater electrofishing are obtained with pulsatile semiconductor converters feeding various electrode systems. Since a detailed mathematical treatment of the converters has not been published, such a study was undertaken in order to design an optimum converter for on-board use. The algorithms advanced are in the form of regression equations of the target functions intended to relate frequency, duration, and amplitude of stimulus to the fish-body potential evoking movement. Figures 1; references 5 (Russian). [142-12172]

UDC 616.831-006:615.814.1

TOPOSCOPY OF BIOLOGICALLY ACTIVE POINTS IN INTRACRANIAL VOLUME PROCESSES

Tbilisi SOOBSHCHENIYA AKADEMII NAUK GRUZINSKOY SSR in Russian Vol 110, No 3, Jun 83 (manuscript received 11 Jun 82) pp 637-639

MURVANIDZE, Z. Sh., BAKURADZE, G. V. and TEVDORADZE, L. A., Tbilisi State Medical Institute

[Abstract] The authors present results of a toposcopic method using an instrument that measures biopotentials on skin surface points, permitting diagnosis of internal activities. Polarity of the input signal is changed automatically, showing divergences from normal biopotentials at biologically-active points. Experimental toposcopy of 54 patients (of which two cases are summarized) indicated that the procedure is useful for supplemental diagnosis of intracranial volume processes. Figures 2. [073-12131]